Pioneer sound.vision.soul

Service Manual

ORDER NO.
RRV3369

DVD RECORDER

DVR-440H-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Piease confirm 3rd & 4th alphabetical letters.
DVR-440H-S	WYXK5	AC220-240V	2	&&UK######$$
DVR-440H-S	WYXV5	AC220-240V	2	&&DL######$$
DVR-440H-S	WVXK5	AC220-240V	2	&&UK######$$
DVR-440H-S	WYXVRE5	AC220-240V	5	&&DL######$$

● This service manual should be used together with the following manual(s):

Model	Order No.	Remarks
DVR-640H-AV/WYXK5	RRV3368	

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
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T – ZZV MAR. 2006 Printed in Japan

1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *Reference Nos. indicate the pages and Nos. in the service manual for the base model.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 × 10³ → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ..... RN1/4PC 5 6 2 1 F

■ CONTRAST TABLE

DVR-440H-S/WYXK5, /WYXV5, /WVXK5, /WYXVRE5 types and DVR-540H-S/WYXK5 are constructed the same except for the following:

Ref. No.	Mark	Symbol and Description	Part No.					Remarks
			DVR-540H-S /WYXK5	DVR-440H-S /WYXK5	DVR-440H-S /WYXV5	DVR-440H-S /WVXK5	DVR-440H-S /WYXVRE5	
		PACKING SECTION						
P9- 1	⚠	Power Cord	ADG7090	ADG7090	ADG7090	ADG7077	ADG7090	
P9- 7		Polyethylene Bag	VHL1051	VHL1051	VHL1088	VHL1051	VHL1088	
P9- 8		HDD Caution 8L B	VRR1046	VRR1046	VRR1062	VRR1046	VRR1062	
P9- 9		HDD Caution 8L	VRR1047	VRR1047	VRR1063	VRR1047	VRR1063	
P9-10		Front Pad	VHA1404	VHA1404	VHA1415	VHA1404	VHA1415	
P9-11		Rear Pad	VHA1405	VHA1405	VHA1416	VHA1405	VHA1416	
P9-12		Packing Case	VHG2698	VHG2717	VHG2729	VHG2716	VHG2732	
P9-13		Mirror Sheet	VHL1107	VHL1107	VHL1095	VHL1107	VHL1095	
P9-20		Operating Instructions (French)	VRC1320	VRC1320	VRC1320	Not used	Not used	
P9-21		Operating Instructions (German)	VRC1321	VRC1321	VRC1321	Not used	Not used	
P9-22		Operating Instructions (Italian)	VRC1322	VRC1322	VRC1322	Not used	Not used	
P9-23		Operating Instructions (Dutch)	VRC1323	VRC1323	VRC1323	Not used	Not used	
P9-24		Operating Instructions (Spanish)	VRC1324	VRC1324	VRC1324	Not used	Not used	
P9-25		Operating Instructions (English)	Not used	Not used	Not used	VRB1411	Not used	
		Operating Instructions (Russian)	Not used	Not used	Not used	Not used	VRC1333	
		EPG Caution Card	Not used	Not used	Not used	Not used	VRR1066	
		EXTERIOR SECTION						
P11- 9		HDD 160GB ST3160022RS	VXF1086	Not used	Not used	Not used	Not used	
P11- 9		HDD 80GB WD800BBJKC	Not used	VXF1066	VXF1066	VXF1066	VXF1066	
P11-24		Rear Panel	VNA2894	VNA2901	VNA2911	VNA2901	VNA2913	
		FRONT PANEL SECTION						
P13-14		FL Lens PTD	VXA2740	VXA2786	VXA2786	VXA2786	VXA2786	
P13-15		Door PTD	VXA2774	VXA2774	VXA2774	VXA2738	VXA2774	

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Service Manual

DVR-640H-AV

ORDER NO.
RRV3368

DVD RECORDER

DVR-640H-AV
DVR-540H-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Please confirm 3rd & 4th alphabetical letters.
DVR-640H-AV	WYXK5	AC220-240V	2	&&UK######$$
DVR-640H-AV	WYXV5	AC220-240V	2	&&DL######$$
DVR-540H-S	WYXK5	AC220-240V	2	&&UK######$$
DVR-540H-S	WYXV5	AC220-240V	2	&&DL######$$
DVR-540H-S	WYXVRE5	AC220-240V	5	&&DL######$$

- **When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.**

An HDD (Hard Disc Drive) is mounted in this product.
The HDD is a precision instrument very vulnerable to shock and electrostatic charges. Please read "7.3 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

For details, refer to "Important Check Points for Good Servicing" .

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T-ZZV APR. 2006 printed in Japan

SAFETY INFORMATION

■ LABEL CHECK

IMPORTANT

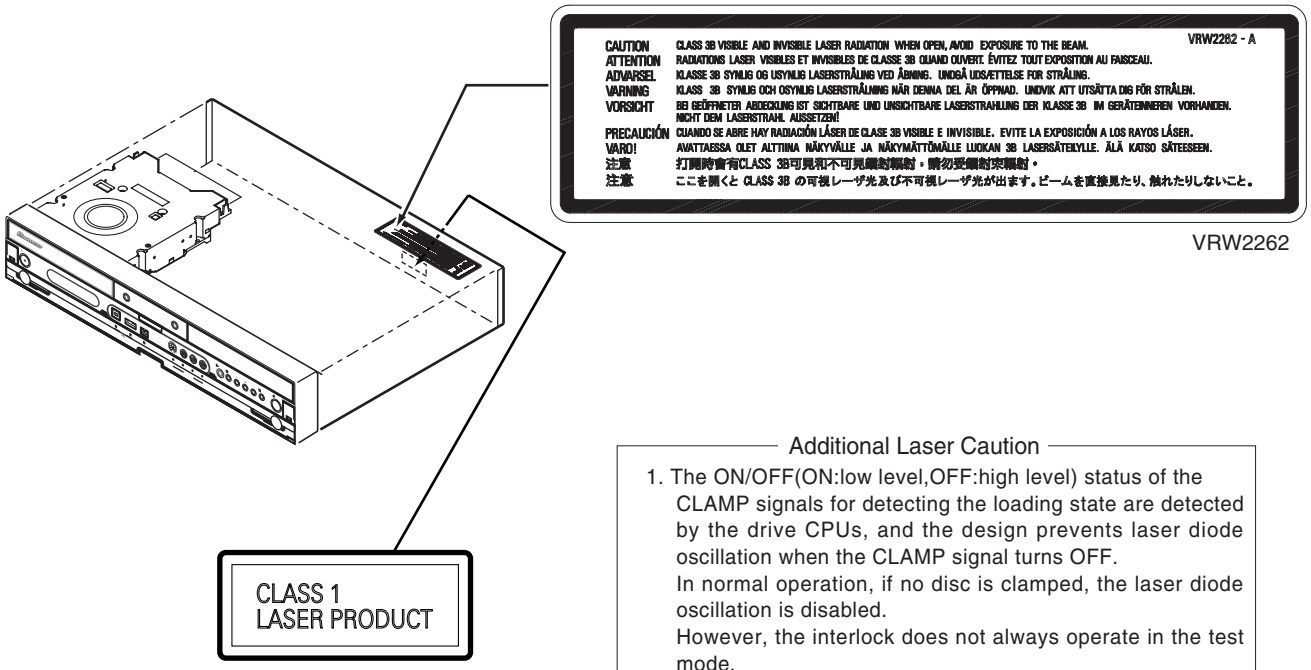
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 100 mW
WAVELENGTH: 654 - 662 nm

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mW
WAVELENGTH: 770 - 810 nm


VRW2262 - A
CAUTION CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意 打開時會有CLASS 3B可見和不可見鐳射輻射。開啟受鐳射束輻射。
注意 ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。

VRW2262

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SPECIFICATIONS

General

Power requirements . . . . . 220 V to 240 V, 50 Hz / 60 Hz
Power consumption
DVR-640H-AV . . . . . 43 W
DVR-540H-S . . . . . 40 W
(DVR-440H-S/DVR-440H-K . . . . . 39 W)
Power consumption in standby mode . . . . . 0.61 W
(Front panel display: off)
Weight
DVR-640H-AV. . . . . 4.4 kg
DVR-540H-S . . . . . .4.3 kg
(DVR-440H-S/DVR-440H-K . . . . . 4.3 kg)
Dimensions . . . . 420 mm (W) x 69 mm (H) x 318 mm (D)
Operating temperature . . . . . .+5 °C to +35 °C
Operating humidity . . . . . .5 % to 85 %
(no condensation)
TV system . . . . . PAL/SECAM/
NTSC (external input only)

Readable discs
DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA)

Recording discs and formats
DVD-R/RW: VR mode and Video mode
DVD+R/+RW: +VR mode
DVD-RAM: VR mode
DVD-R DL: VR mode and Video mode
DVD+R DL: +VR mode

Video recording format
Sampling frequency . . . . . 13.5 MHz
Compression format. . . . . MPEG
Audio recording format
Sampling frequency . . . . . .48 kHz
Compression format . . . . . Dolby Digital or Linear PCM
(uncompressed)

Recording time
HDD
DVR-640H-AV/DVR-540H-S (160 GB)
Fine (XP) . . . . . Approx. 34 h
Standard Play (SP) . . . . . .Approx. 68 h
Long Play (LP) . . . . . Approx. 136 h
Extended Play (EP) . . . . . Approx. 204 h
Super Long Play (SLP) . . . . . Approx. 272 h
Super Extended Play (SEP) . . . . . .Approx. 340 h
Manual Mode (MN). . . . . Approx. 34 h to 455 h

DVR-440H-S/K (80 GB) (Reference)
Fine (XP). . . . . .Approx. 17 h
Standard Play (SP) . . . . . .Approx. 34 h
Long Play (LP) . . . . . Approx. 68 h
Extended Play (EP) . . . . . Approx. 102 h
Super Long Play (SLP) . . . . . .Approx. 136 h
Super Extended Play (SEP) . . . . . .Approx. 170 h
Manual Mode (MN). . . . . Approx. 17 h to 227 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM
Fine (XP) . . . . . Approx. 1 h
Standard Play (SP) . . . . . Approx. 2 h
Long Play (LP) . . . . . .Approx. 4 h
Extended Play (EP) . . . . . .Approx. 6 h
Super Long Play (SLP) . . . . . Approx. 8 h
Super Extended Play (SEP) . . . . . .Approx. 10 h
(DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)
DVD-R/-RW/-RAM . . . . . Approx. 1 h to 13 h
DVD+R/+RW . . . . . Approx. 1 h to 8 h

DVD-R DL/DVD+R DL
Fine (XP) . . . . . .Approx. 1 h 51 m
Standard Play (SP) . . . . . .Approx. 3 h 35 m
Long Play (LP) . . . . . Approx. 7 h 11 m
Extended Play (EP) . . . . . Approx. 10 h 46 m
Super Long Play (SLP) . . . . . .Approx. 14 h 21 m
Super Extended Play (SEP) . . . . . Approx. 17 h 57 m
(DVD-R DL only)
Manual Mode (MN)
DVD-R DL . . . . . Approx. 1 h 51 m to 24 h
DVD+R DL . . . . . Approx. 1 h 51 m to 14 h 21 m

Timer

Programs . . . . . .1 month/32 programs
Clock . . . . . Quartz lock (24-hour digital display)

Tuner

Receivable channels

	SECAM B/G PAL B/G		PAL I	
	Frequency	Channel	Frequency	Channel
VHF (low)	47 MHz to 89 MHz	E2 to E4 X to Z	44 MHz to 89 MHz	A to C X to Z
VHF (high)	104 MHz to 300 MHz	E5 to E12 S1 to S20 M1 to M10 U1 to U10	104 MHz to 300 MHz	D to J 11, 13 S1 to S20
Hyper	302 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	E21 to E69	470 MHz to 862 MHz	E21 to E69

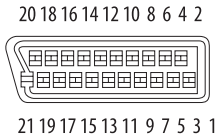
	SECAM L		SECAM D/K PAL D/K	
	Frequency	Channel	Frequency	Channel
VHF (low)	49 MHz to 65 MHz	FB, FC1, FC	49 MHz to 94 MHz	R1 to R5
VHF (high)	104 MHz to 300 MHz	F1 to F6 B to Q	104 MHz to 300 MHz	R6 to R12 S1 to S20
Hyper	300 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	21 to 69	470 MHz to 862 MHz	E21 to E69

STEREO
B/G - A2
I - NICAM
L - NICAM
B/G - NICAM
D/K - NICAM

Input/Output

VHF/UHF antenna input/output terminal
. . . . . .VHF/UHF set 75Ω (IEC connector)
Video input . . . . . Input 2 (front)
Input level . . . . . 1 Vp-p (75Ω)
Jacks . . . . . AV connector 2 (Input 1),
RCA jack (Input 2)
Video output . . . . . AV1, Output
Output level . . . . . 1 Vp-p (75Ω)
Jacks . . . . . AV connector (AV1)
RCA jack (Output)
S-Video input . . . . . Input 2 (front)
Y (luminance) - Input level . . . . . 1 Vp-p (75Ω)
C (colour) - Input level . . . . . 300 mVp-p (75Ω)
Jacks . . . . . AV connector 2 (Input 1),
4 pin mini DIN (Input 2)
S-Video output . . . . . AV1, Output
Y (luminance) - Output level . . . . . 1 Vp-p (75Ω)
C (colour) - Output level . . . . . 300 mVp-p (75Ω)
Jacks . . . . . AV connector 1 (AV1),
4 pin mini DIN (Output)
Component video output
Output level . . . . . Y: 1.0 Vp-p (75Ω)
P_B, P_R: 0.7 Vp-p (75Ω)
Jacks . . . . . RCA jacks
RGB input
Input level . . . . . 0.7 Vp-p (75Ω)
Jacks . . . . . AV connector 2 (Input 1)
RGB output
Output level . . . . . 0.7 Vp-p (75Ω)
Jacks . . . . . AV connector 1 (AV1)
Audio input . . . . . Input 2 (front) L/R
Input level
During audio input . . . . . 2 V rms
(Input impedance: more than 22 kΩ)
Jacks . . . . . .AV connector 2 (Input 1),
RCA jacks (Input 2)
Audio output . . . . . AV1, Output
During audio output . . . . . 2 V rms
(Output impedance: less than 1.5 kΩ)
Jacks . . . . . AV connector 1 (AV1),
RCA jacks (Output)
Control input . . . . . .Mini jack
Digital audio ouptut . . . . . Coaxial
G-LINK™ . . . . . Mini jack

AV Connectors (21-pin connector assignment)
AV connector input/output . . . . . 21-pin connector
This connector provides the video and audio signals for connection to a compatible colour TV or monitor.



PIN no.	AV1(RGB)-TV / AV2(INPUT 1)
1	Audio 2/R out / Audio 2/R out
2	- / Audio 2/R in
11	G out / G in
3	Audio 1/L out / Audio 1/L out
6	- / Audio 1/L in
15	R or C out / R or C in
4	GND
17	GND
7	B out / B in
19	Video out or Y out / Video out
20	- / Video in or Y in
8	Status
21	GND

Supplied accessories

Remote control 1
Dry cell batteries (AA/R6P) 2
Audio / Video cable (red/white/yellow) 1
G-LINK™ cable 1
RF antenna cable 1
Power cable 1
Operating Instructions
Warranty card 1

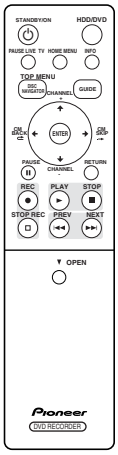
Note: The specifications and design of this product are subject to change without notice, due to improvement.

This product includes FontAvenue® fonts licenced by NEC corporation. FontAvenue is a registered trademark of NEC Corporation.

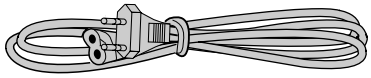
● Accessories

Except DVR-640H-AV

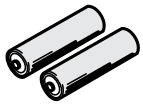
• Remote control ×1
(VXX3129)



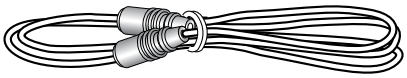
• Power cable ×1
(ADG1127 : WYXK5, WYXV5, WYXVRE5 types)



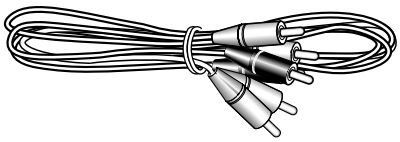
• Dry cell batteries ×2
(AA/R6P)



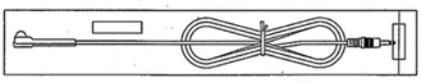
• RF antenna cable(PAL) ×1
(VDE1075)



• Audio / Video cable(1.5m) ×1
(red/white/yellow)
(VDE1077)



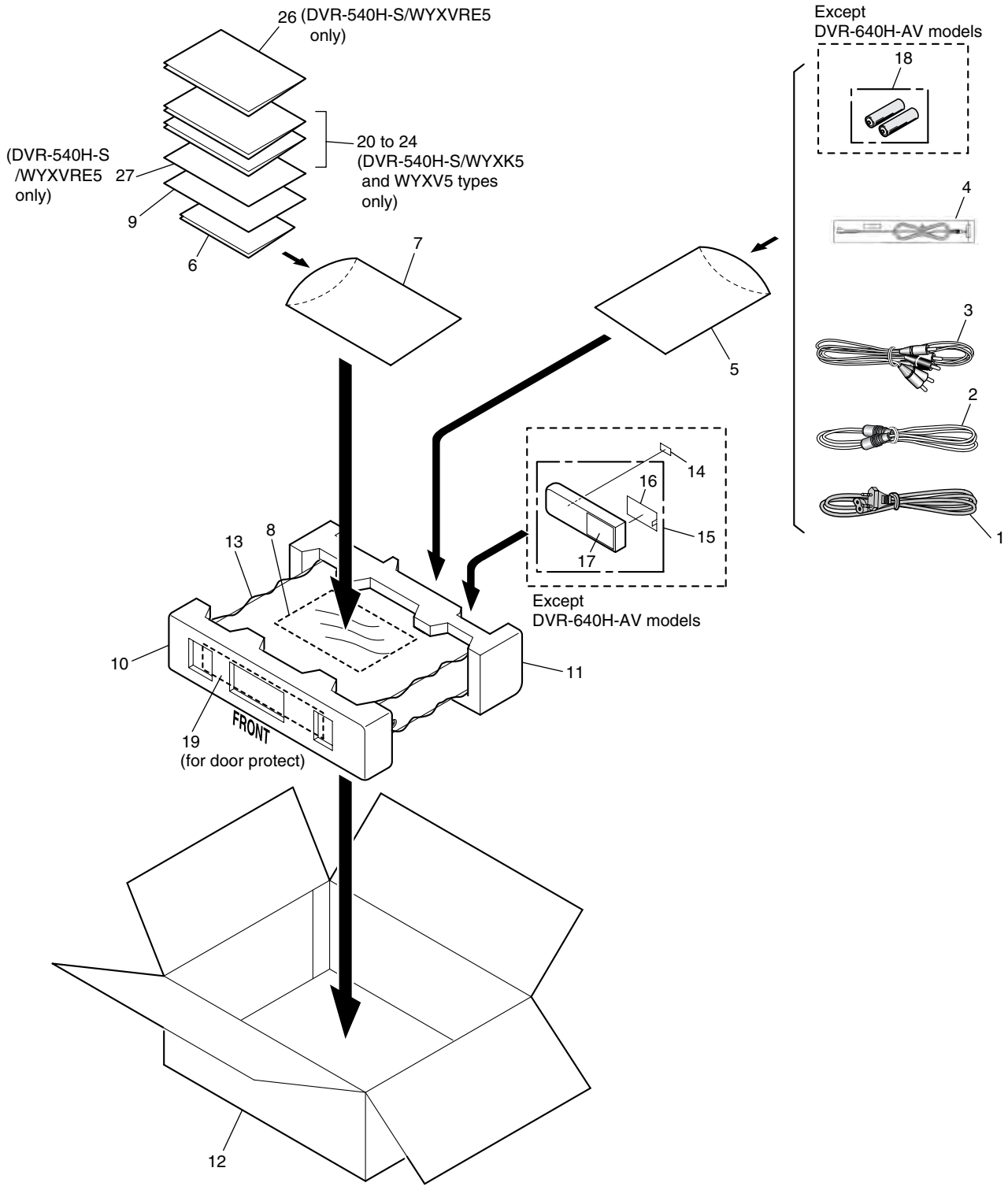
• G-Link Cable (3m) ×1
(VDX1010)



2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



(1) PACKING SECTION PARTS LIST

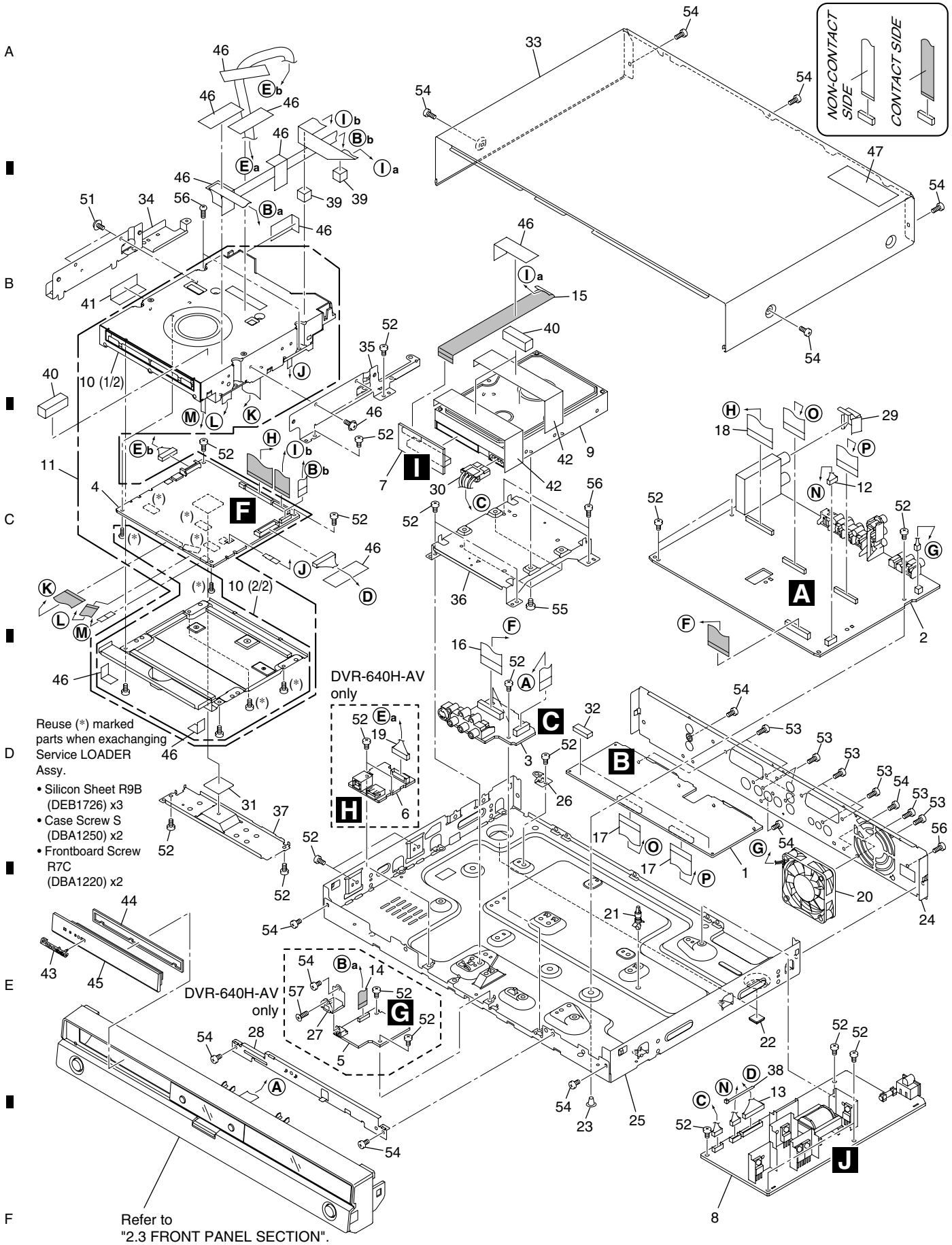
Mark	No.	Description	Part No.
⚠	1	Power Cord	See Contrast table (2)
	2	RF Antenna Cable (PAL)	VDE1075
	3	Audio/Video Cable (1.5m)	VDE1077
	4	G-Link Cable (3m)	VDX1010
	5	Polyethylene Bag B5	VHL1088
NSP	6	Warranty Card	ARY7065
	7	Polyethylene Bag	See Contrast table (2)
NSP	8	HDD Caution 8L B	See Contrast table (2)
NSP	9	HDD Caution 8L	See Contrast table (2)
	10	Front Pad	See Contrast table (2)
	11	Rear Pad	See Contrast table (2)
	12	Packing Case	See Contrast table (2)
	13	Mirror Sheet	See Contrast table (2)
	14	WEEE Label	See Contrast table (2)
	15	Remote Control Unit	See Contrast table (2)
	16	Battery Cover	See Contrast table (2)
	17	Top Cover	See Contrast table (2)
NSP	18	Dry Cell Battery (R6P, AA)	See Contrast table (2)
	19	Mirror Sheet	VHL1104
	20	Operating Instructions	See Contrast table (2)
	21	Operating Instructions	See Contrast table (2)
	22	Operating Instructions	See Contrast table (2)
	23	Operating Instructions	See Contrast table (2)
	24	Operating Instructions	See Contrast table (2)
	25	Operating Instructions	See Contrast table (2)
	26	Operating Instructions	See Contrast table (2)
	27	EPG Caution Card	See Contrast table (2)

(2) CONTRAST TABLE

DVR-640H-AV/WYXK5, WYXV5, DVR-540H-S/WYXK5, WYXV5 and WYXVRE5 are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-640H-AV /WYXK5	DVR-640H-AV /WYXV5	DVR-540H-S /WYXK5	DVR-540H-S /WYXV5	DVR-540H-S /WYXVRE5
⚠	1	Power Cord	ADG1127	ADG1127	ADG1127	ADG1127	ADG1127
	7	Polyethylene Bag	VHL1051	VHL1088	VHL1051	VHL1088	VHL1088
NSP	8	HDD Caution 8L B	VRR1046	VRR1062	VRR1046	VRR1062	VRR1062
NSP	9	HDD Caution 8L	VRR1047	VRR1063	VRR1047	VRR1063	VRR1063
	10	Front Pad	VHA1404	VHA1415	VHA1404	VHA1415	VHA1415
	11	Rear Pad	VHA1405	VHA1416	VHA1405	VHA1416	VHA1416
	12	Packing Case	VHG2719	VHG2757	VHG2698	VHG2683	VHG2734
	13	Mirror Sheet	VHL1107	VHL1095	VHL1107	VHL1095	VHL1095
	14	WEEE Label	Not used	Not used	VRW2231	VRW2231	VRW2231
	15	Remote Control Unit	Not used	Not used	VXX3129	VXX3129	VXX3129
	16	Battery Cover	Not used	Not used	VZN1004	VZN1004	VZN1004
	17	Top Cover	Not used	Not used	VZN1009	VZN1009	VZN1009
NSP	18	Dry Cell Battery (R6P, AA)	Not used	Not used	VEM1010	VEM1010	VEM1010
	20	Operating Instructions (French)	Not used	Not used	VRC1320	VRC1320	Not used
	21	Operating Instructions (German)	Not used	Not used	VRC1321	VRC1321	Not used
	22	Operating Instructions (Italian)	Not used	Not used	VRC1322	VRC1322	Not used
	23	Operating Instructions (Dutch)	Not used	Not used	VRC1323	VRC1323	Not used
	24	Operating Instructions (Spanish)	Not used	Not used	VRC1324	VRC1324	Not used
	25	Operating Instructions (English)	Not used	Not used	Not used	Not used	Not used
	26	Operating Instructions (Russian)	Not used	Not used	Not used	Not used	VRC1333
	27	EPG Caution Card	Not used	Not used	Not used	Not used	VRR1066

2.2 EXTERIOR SECTION


NON-CONTACT SIDE
CONTACT SIDE
Reuse (*) marked parts when exachanging Service LOADER Assy.
• Silicon Sheet R9B (DEB1726) x3
• Case Screw S (DBA1250) x2
• Frontboard Screw R7C (DBA1220) x2
DVR-640H-AV only
DVR-640H-AV only
Refer to "2.3 FRONT PANEL SECTION".

(1) EXTERIOR SECTION PARTS LIST

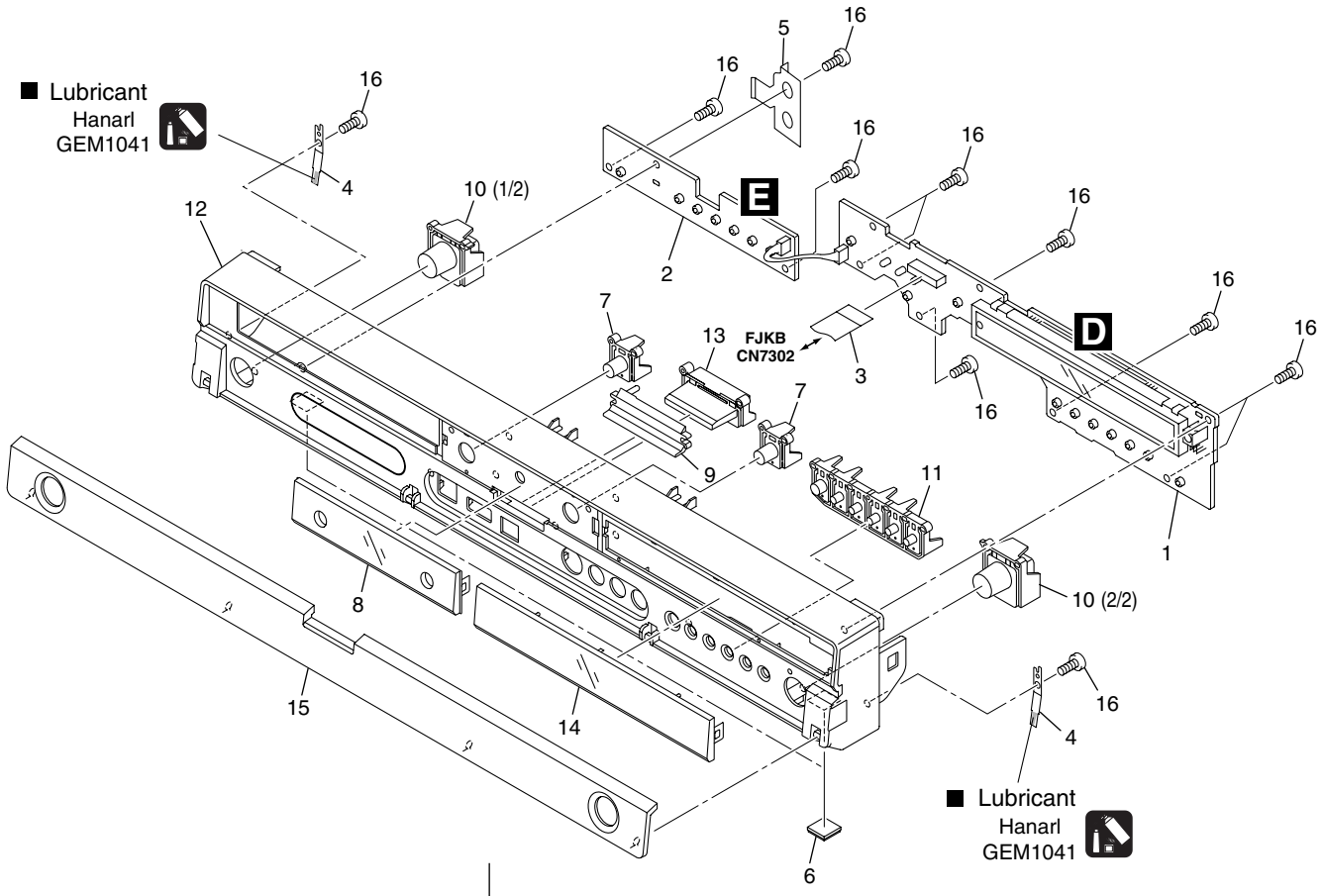
Mark	No.	Description	Part No.
	1	SCRB Assy	VWV2206
	2	TUJB Assy (for service)	See Contrast table (2)
	3	FJKB Assy (for service)	VXX3113
	4	MAIN Assy (for service)	See Contrast table (2)
	5	DVJB Assy	See Contrast table (2)
	6	USBB Assy	See Contrast table (2)
	7	ATAB Assy (for service)	VXX3140
⚠	8	POWER SUPPLY Unit	VWR1399
	9	HDD 160GB ST3160022RS	VXF1086
	10	LOADER Assy (for service)	VXX3156
NSP	11	Service LOADER MAIN	See Contrast table (2)
	12	Connector Assy	PF05PP-S07
	13	Connector Assy	PF13PP-S22
	14	Flexible Cable 24P	See Contrast table (2)
	15	Flexible Cable 40P	VDA2112
	16	Flexible Cable 23P	VDA2115
	17	Flexible Cable 29P	VDA2117
	18	Flexible Cable 35P	VDA2118
	19	Housing USB (MAIN)	See Contrast table (2)
	20	DC Fan Motor 60	VXM1125
	21	PCB Support	AEC1215
	22	Rubber Foot	VEB1349
NSP	23	PC Support	VEC1749
	24	Rear Panel	See Contrast table (2)
NSP	25	Chassis	VNB1055
NSP	26	PCB Base	VNE2378
	27	DV Angle	See Contrast table (2)
NSP	28	Bridge	VNE2429
	29	Earth Plate TU	VBK1162
	30	Housing Assy 4P	VKP2357
	31	Radiation Sheet (Silicone)	VEB1360
	32	Rubber Spacer	VEB1378
	33	Bonnet	VXX3105
NSP	34	Writer Stay L	VNE2421
NSP	35	Writer Stay R	VNE2422
NSP	36	HDD Stay	VNE2423
	37	Heatsink	VNH1077
NSP	38	Binder (BK-1)	ZCA-BK1
	39	Rubber Spacer B	VEB1380
	40	Gasket 30 x 10T	VEC2522
	41	Aluminum Tape 25 x 25	VEF1060
	42	Aluminum Tape 180 x 25	VEF1065
	43	Pioneer Name Plate	VAM1148
	44	Tray Sheet	VEC2500
	45	Tray Panel	VNK5910
NSP	46	Tape	ZTA-156A-19
	47	Laser Caution Label	VRW2262
	48	• • • • •	
	49	• • • • •	
	50	• • • • •	
	51	Screw	AMZ30P040FTC
	52	Screw	BBZ30P060FTC
	53	Screw	BPZ30P080FTC
	54	Screw	BSZ30P040FTC
	55	#6-32 Screw	DBA1125
	56	Screw	PBZ30P080FTC
	57	Screw M3 x 8	See Contrast table (2)

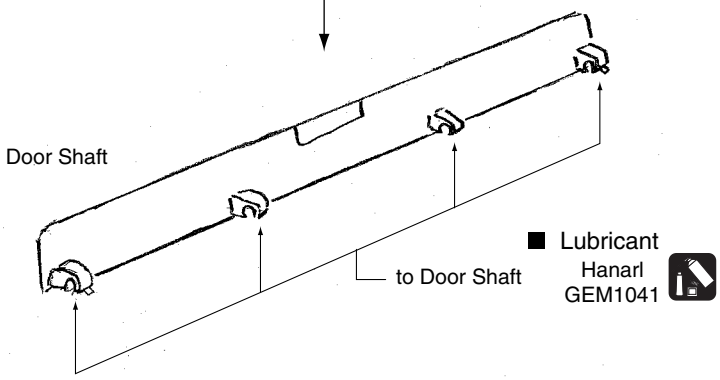
(2) CONTRAST TABLE

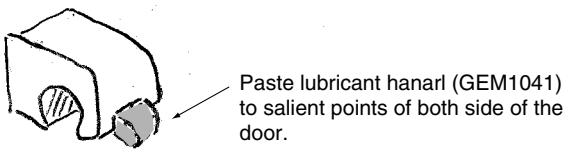
DVR-640H-AV/WYXK5, WYXV5, DVR-540H-S/WYXK5, WYXV5, WVXK5 and WYXVRE5 are constructed the same except for the following:

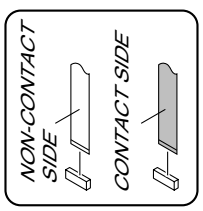
Mark	No.	Symbol and Description	DVR-640H-AV /WYXK5	DVR-640H-AV /WYXV5	DVR-540H-S /WYXK5	DVR-540H-S /WYXV5	DVR-540H-S /WYXVRE5
	2	TUJB Assy (for service)	VXX3109	VXX3109	VXX3108	VXX3108	VXX3108
	4	MAIN Assy (for service)	VXX3157	VXX3157	VXX3159	VXX3159	VXX3159
	5	DVJB Assy	VWV2160	VWV2160	Not used	Not used	Not used
	6	USBB Assy	VWV2161	VWV2161	Not used	Not used	Not used
NSP	11	Service LOADER MAIN	VXU1001	VXU1001	VXU1002	VXU1002	VXU1002
	14	Flexible Cable 24P	VDA2111	VDA2111	Not used	Not used	Not used
	19	Housing USB (MAIN)	VKP2380	VKP2380	Not used	Not used	Not used
	24	Rear Panel	VNA2903	VNA2931	VNA2894	VNA2916	VNA2915
	27	DV Angle	VNE2426	VNE2426	Not used	Not used	Not used
	57	Screw M3 x 8	VBA1088	VBA1088	Not used	Not used	Not used

2.3 FRONT PANEL SECTION









(1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	FLKY Assy (for service)	VXX3111
	2	KEYB Assy (for service)	VXX3112
	3	Flexible Cable 12P	VDA2116
	4	Door Spring	VBK1159
	5	Earth Plate	VBK1166
	6	Rubber Foot	VEB1349
	7	Sub Key	VNK5909
	8	Center Cover	VNK5911
	9	LED Lens	VNK5913
	10	Main Key	See Contrast table (2)
	11	Function Key	VNK5936
	12	Front Panel	See Contrast table (2)
	13	Center Key	See Contrast table (2)
	14	FL Lens PTD	See Contrast table (2)
	15	Door PTD	See Contrast table (2)
	16	Screw	BPZ30P080FTC

(2) CONTRAST TABLE

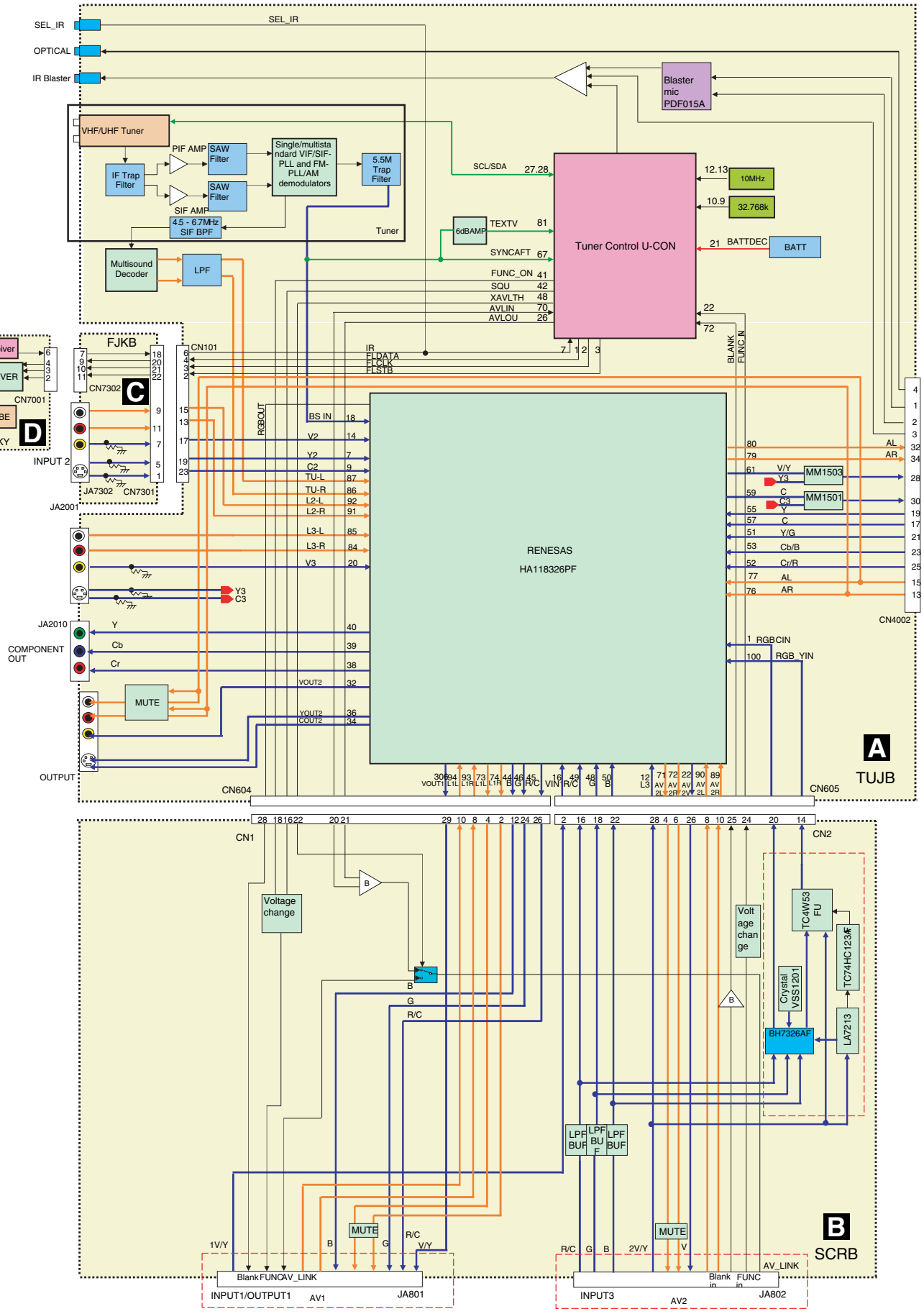
DVR-640H-AV/WYXK5, WYXV5, DVR-540H-S/WYXK5, WYXV5, WVXK5 and WYXVRE5 are constructed the same except for the following:

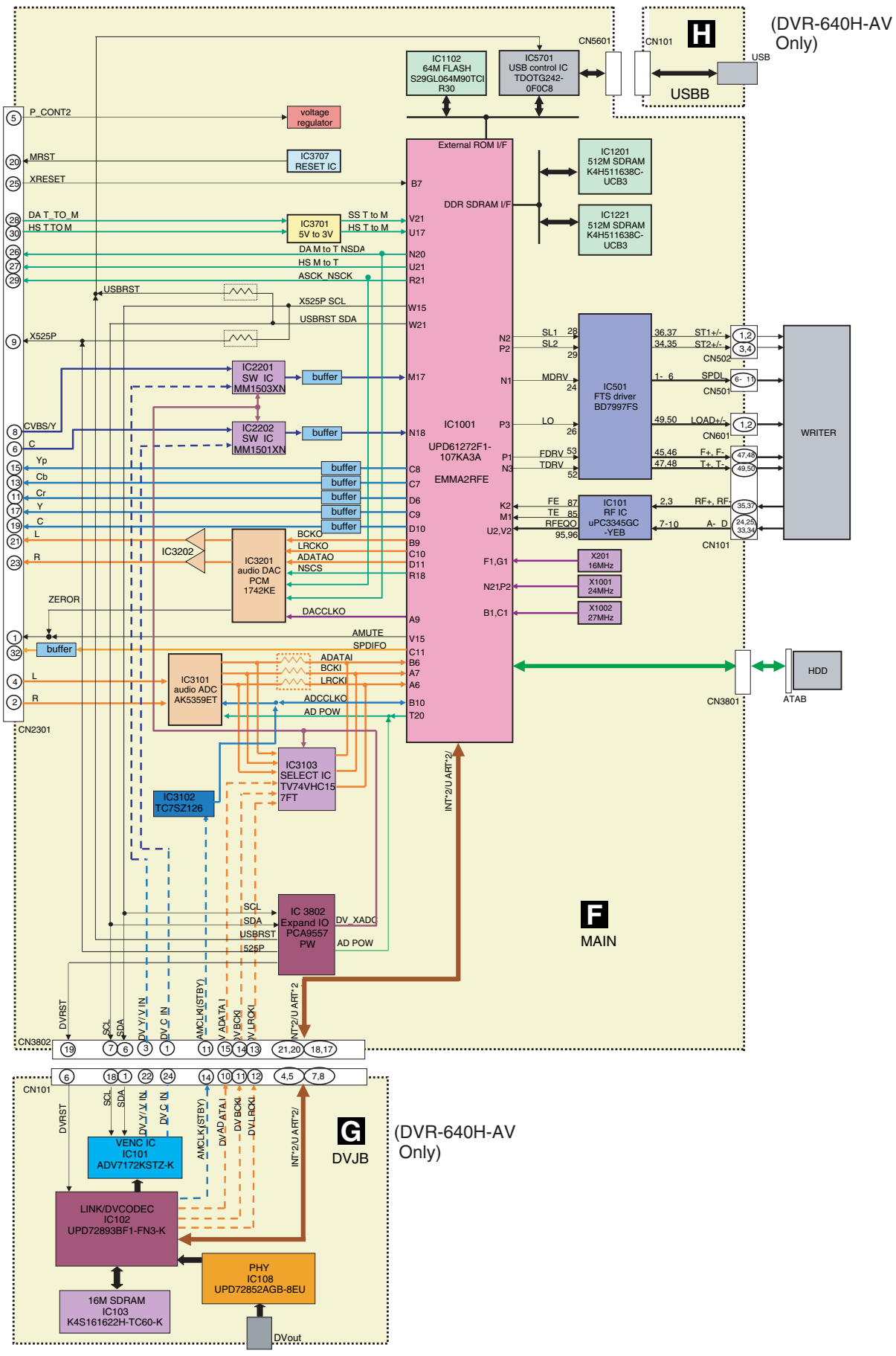
Mark	No.	Symbol and Description	DVR-640H-AV /WYXK5	DVR-640H-AV /WYXV5	DVR-540H-S /WYXK5	DVR-540H-S /WYXV5	DVR-540H-S /WYXVRE5
	10	Main Key	VNK5925	VNK5925	VNK5908	VNK5908	VNK5908
	12	Front Panel	VNK5957	VNK5957	VNK5923	VNK5923	VNK5923
	13	Center Key	VNK6026	VNK6026	VNK6025	VNK6025	VNK6025
	14	FL Lens PTD	VXA2741	VXA2741	VXA2740	VXA2740	VXA2740
	15	Door PTD	VXA2775	VXA2775	VXA2774	VXA2774	VXA2774

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

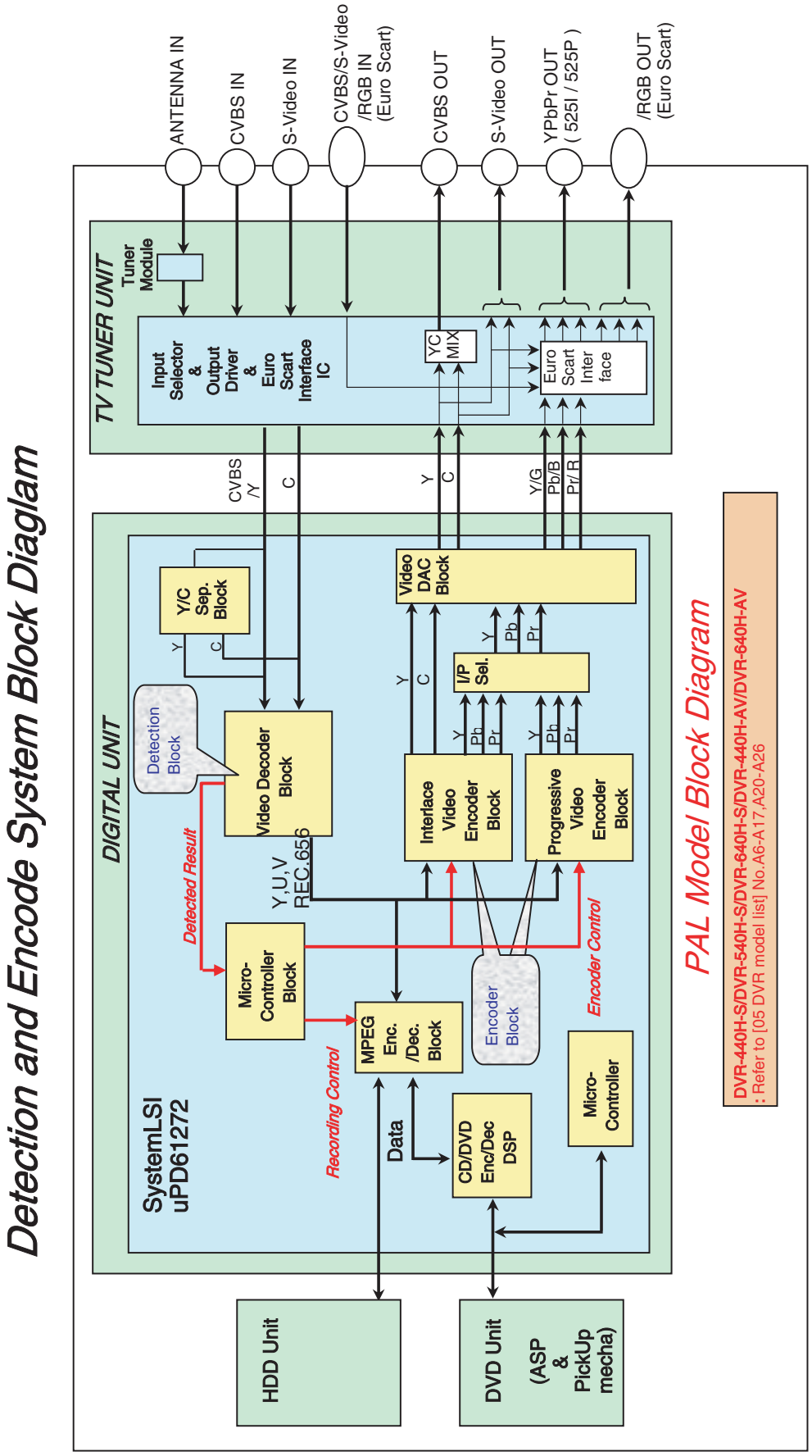
3.1 BLOCK DIAGRAM

3.1.1 OVERALL BLOCK DIAGRAM

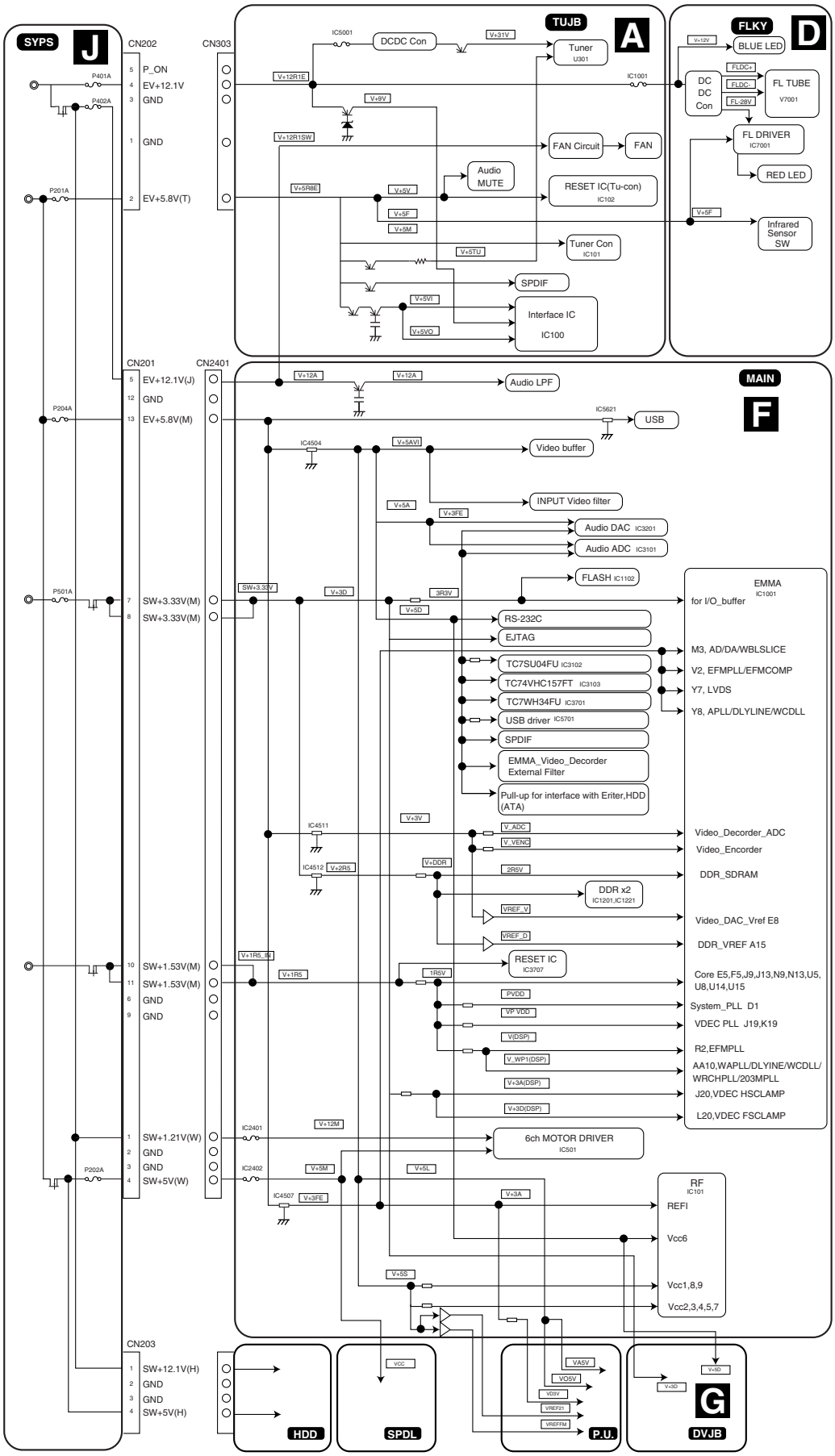



H
(DVR-640H-AV Only)
CN5601
CN101
USB
USBB
IC1102 64M FLASH S29GL064M90TCI R30
IC5701 USB control IC TDOTG242-0F0C8
P_CONT2
voltage regulator
MRST
IC3707 RESET IC
XRESET
External ROM I/F
B7
DDR SDRAM I/F
IC1201 512M SDRAM K4H511638C-UCB3
IC1221 512M SDRAM K4H511638C-UCB3
DA T_TO_M
HS T TO M
IC3701 5V to 3V
SS T to M
HS T to M
V21
U17
DA M to T NSDA
HS M to T
ASCK_NSCK
N20
U21
R21
USBRST
X525P SCL
USBRST SDA
W15
W21
X525P
IC2201 SW IC MM1503XN
IC2202 SW IC MM1501XN
buffer
M17
N18
CVBS/Y
C
Yp
Cb
Cr
Y
C
L
R
C8
C7
D6
C9
D10
IC1001
UPD61272F1-107KA3A
EMMA2RFE
IC3202
IC3201 audio DAC PCM 1742KE
BCKO
LRCKO
ADATAO
NSCS
B9
C10
D11
R18
ZEROR
DACCLKO
A9
AMUTE
SPDIFO
V15
C11
IC3101 audio ADC AK5359ET
ADATAI
BCKI
LRCKI
B6
A7
A6
ADCCLKO
AD POW
B10
T20
CN2301
IC3103 SELECT IC TV74VHC157FT
IC3102 TC7SZ126
INT*2/UART*2/
IC3802 Expand IO PCA9557 PW
SCL
SDA
USBRST
525P
DV_XADC
AD POW
F
MAIN
IC501 FTS driver BD7997FS
N2
P2
N1
P3
P1
N3
SL1
SL2
MDRV
LO
FDRV
TDRV
IC101 RF IC uPC3345GC-YEB
K2
M1
U2,V2
FE
TE
RFEQO
F1,G1
N21,P2
B1,C1
X201 16MHz
X1001 24MHz
X1002 27MHz
ST1+/-
ST2+/-
CN502
SPDL
CN501
LOAD+/-
CN601
F+, F-
T+, T-
RF+, RF-
A- D
CN101
WRITER
CN3801
HDD
ATAB
CN3802
DVRST
SCL
SDA
DV_Y/V IN
DV_C IN
AMCLK(STBY)
DV AD ATA I
DV BCKI
DV LRCKI
INT*2/UART*2
CN101
VENC IC IC101 ADV7172KSTZ-K
LINK/DVCODEC IC102 UPD72893BF1-FN3-K
PHY IC108 UPD72852AGB-8EU
16M SDRAM IC103 K4S161622H-TC60-K
DVout
G
DVJB
(DVR-640H-AV Only)

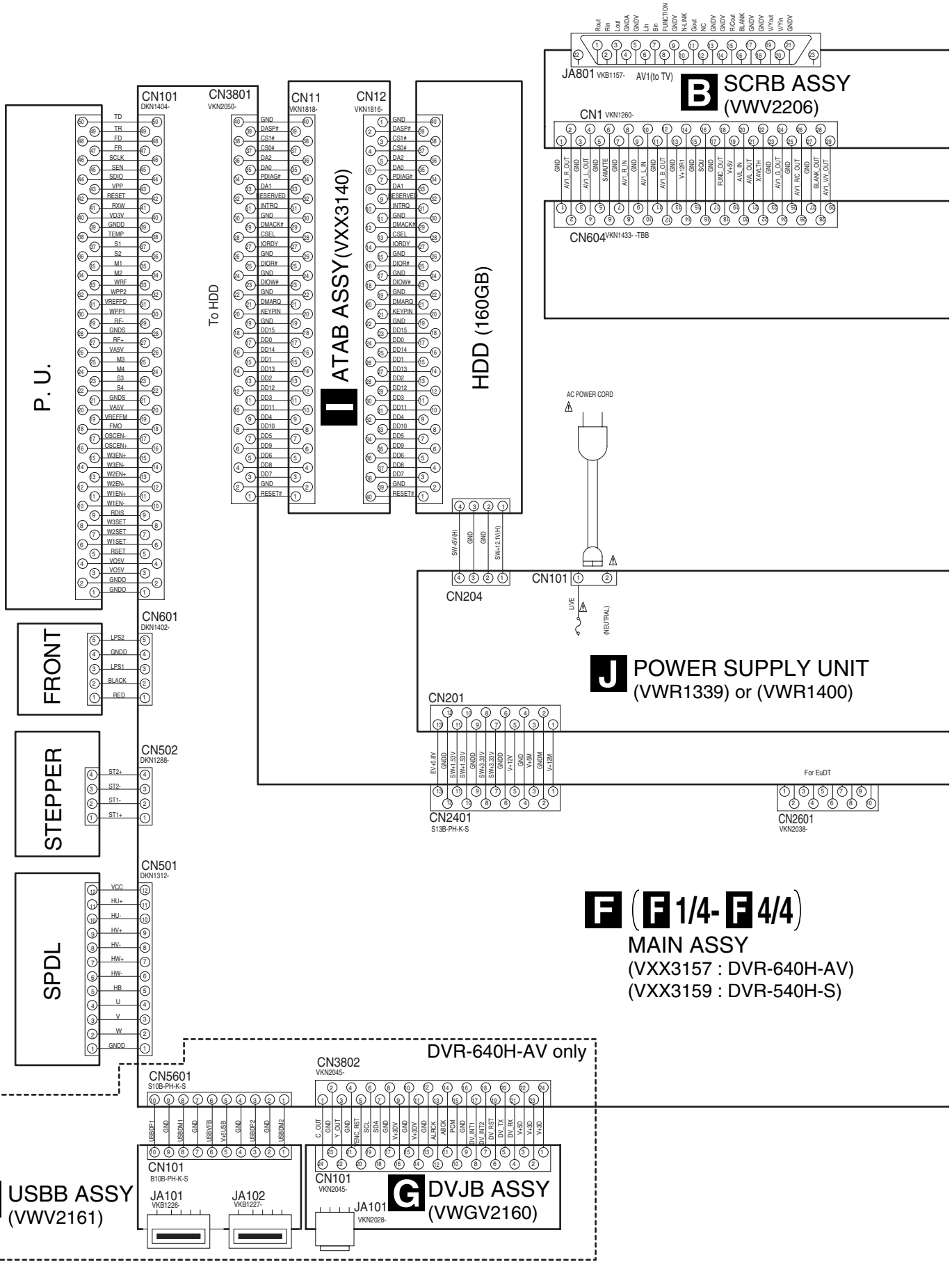
3.1.2 DETECTION AND ENCODE SYSTEM BLOCK DIAGRAM

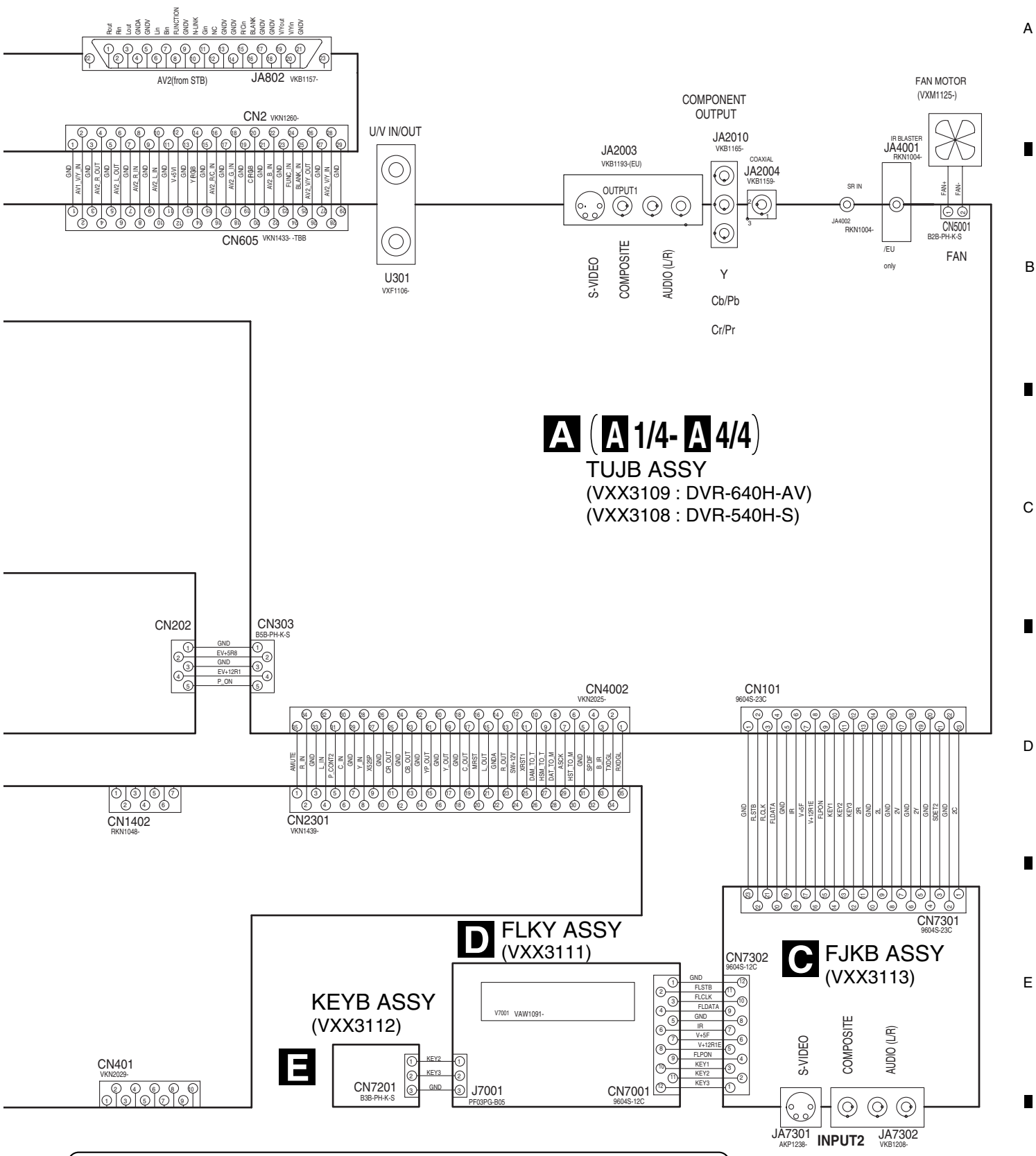


3.1.3 POWER BLOCK



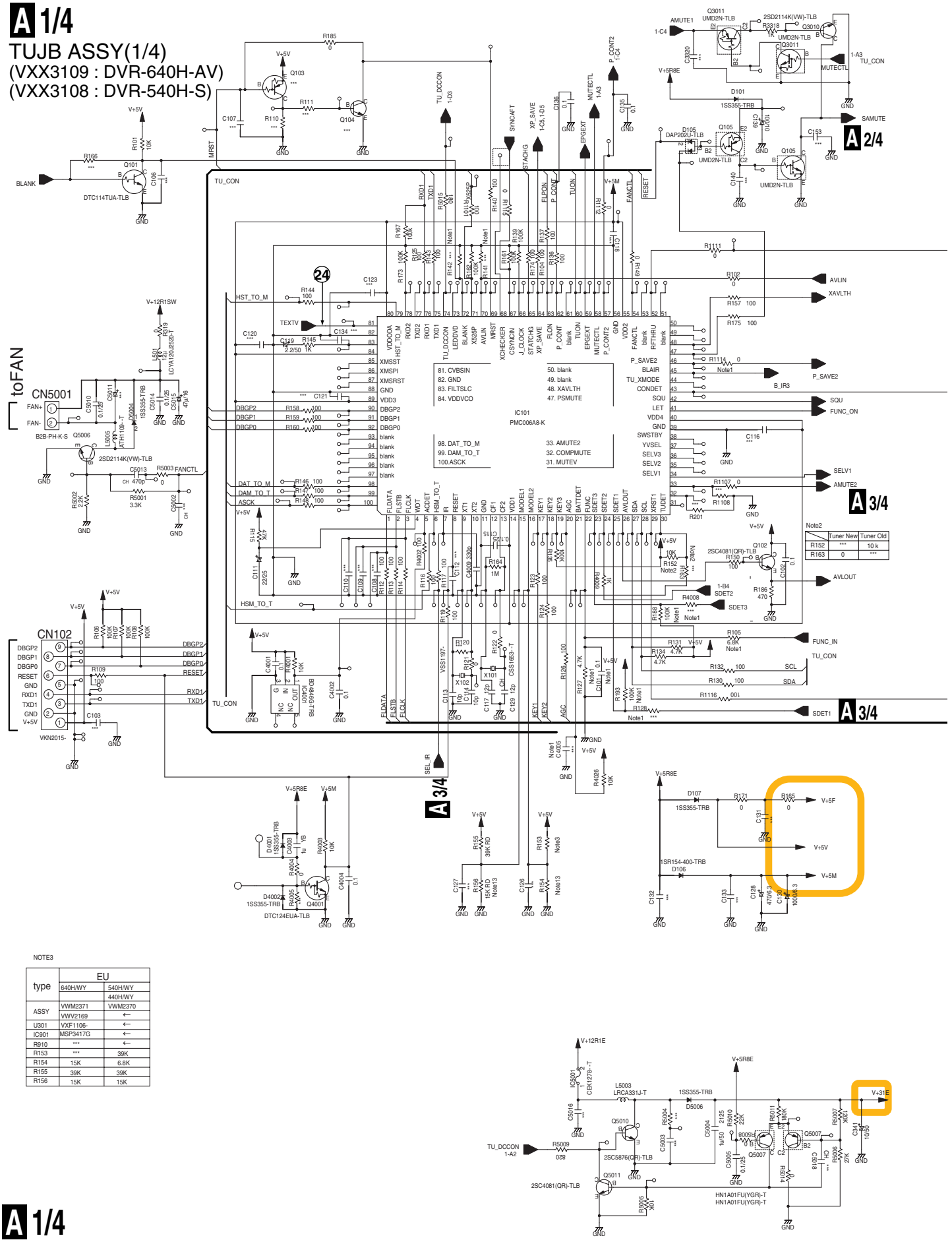
3.2 OVERALL WIRING DIAGRAM





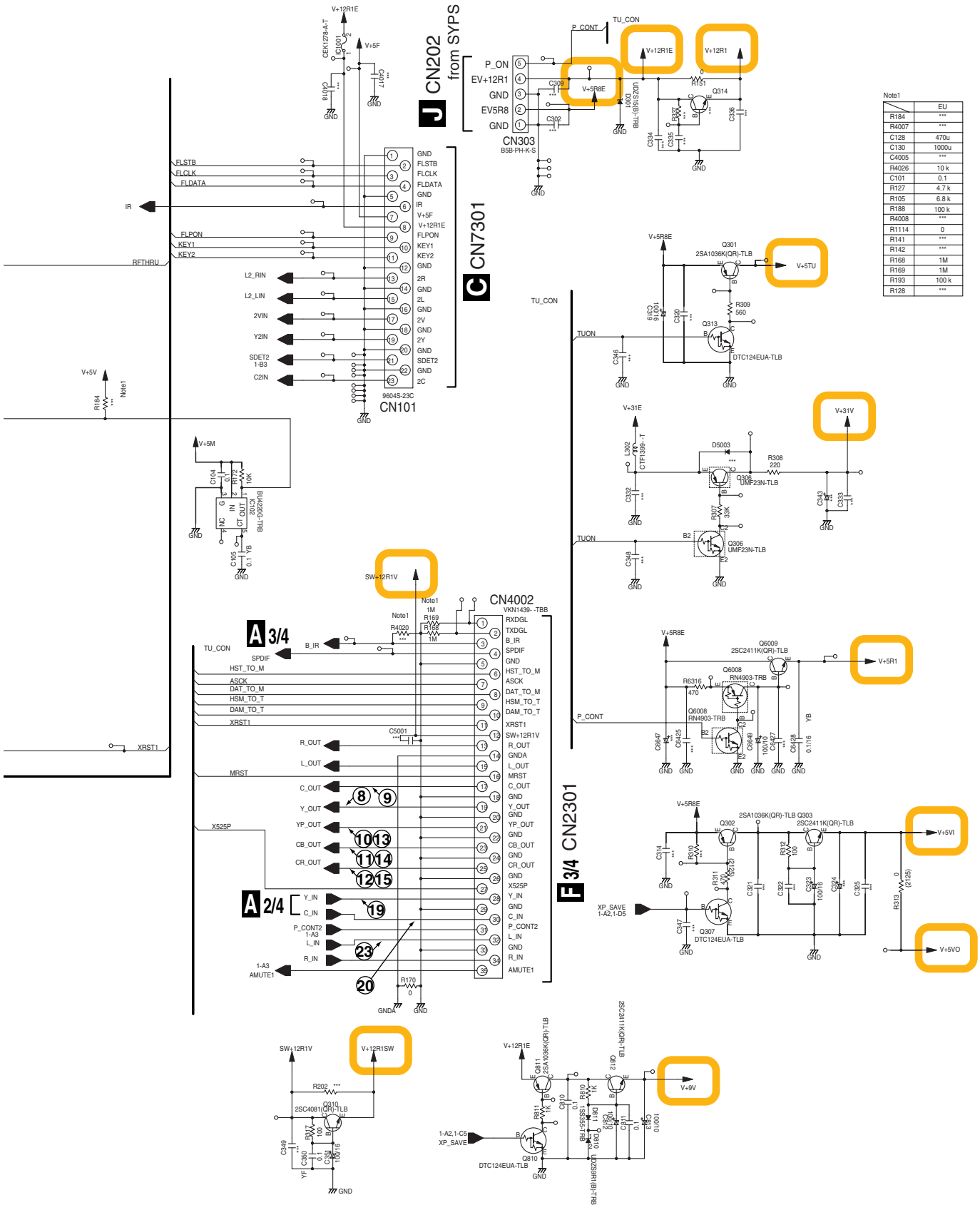
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.

3.3 TUJB ASSY (1/4)



NOTE3

type	EU	
	640H/WY	540H/WY
		440H/WY
ASSY	VWM2371	VWM2370
	VWV2169	←
U301	VXF1106-	←
IC901	MSP3417G	←
R910	***	←
R153	***	39K
R154	15K	6.8K
R155	39K	39K
R156	15K	15K


J CN202 from SYPS
P_ON
EV+12R1
GND
EV5R8
GND
CN303
B5B-PH-K-S
P_CONT
TU_CON
V+12R1E
V+12R1
V+5R8E
UDZS16(B)-TRB
D301
R131
Q314
C309
C302
C334
C335
C336
C CN7301
FLSTB
FLCLK
FLDATA
IR
FLPON
KEY1
KEY2
RFTHRU
L2_RIN
L2_LIN
2VIN
Y2IN
SDET2
1-B3
C2IN
GND
FLSTB
FLCLK
FLDATA
IR
V+5F
V+12R1E
FLPON
KEY1
KEY2
2R
2L
2V
2V
2V
SDET2
2C
9604S-23C
CN101
CEK1278-A-T
IC1001
C1017
C1018
V+5V
R184
Note1
V+5M
C104
R172
10K
BH3226F-TRB
C105
0.1/16
Note1
EU
R184 ***
R4007 ***
C128 470u
C130 1000u
C4005 ***
R4026 10 k
C101 0.1
R127 4.7 k
R105 6.8 k
R188 100 k
R4008 ***
R1114 0
R141 ***
R142 ***
R168 1M
R169 1M
R193 100 k
R128 ***
V+5R8E
Q301
2SA1036K(QR)-TLB
V+5TU
R309
560
Q313
DTC124EUA-TLB
C319
C320
C346
TU_CON
TUON
V+31E
V+31V
L302
CTF1399--T
D5003
R308
220
Q306
UMF23N-TLB
C332
C343
C333
R307
33K
C348
Q306
UMF23N-TLB
SW+12R1V
CN4002
VKN1439- -TBB
Note1
1M
R169
R170
1M
R4020
A 3/4
TU_CON
SPDIF
B_IR
HST_TO_M
ASCK
DAT_TO_M
HSM_TO_T
DAM_TO_T
XRST1
C5001
R_OUT
L_OUT
MRST
C_OUT
Y_OUT
YP_OUT
CB_OUT
CR_OUT
X525P
A 2/4
Y_IN
C_IN
P_CONT2
1-A3
L_IN
R_IN
1-A3
AMUTE1
GNDA
RXDGL
TXDGL
B_IR
SPDIF
GND
HST_TO_M
ASCK
DAT_TO_M
HSM_TO_T
DAM_TO_T
XRST1
SW+12R1V
R_OUT
GNDA
L_OUT
MRST
C_OUT
GND
Y_OUT
GND
YP_OUT
GND
CB_OUT
GND
CR_OUT
GND
X525P
Y_IN
GND
C_IN
P_CONT2
L_IN
GND
R_IN
AMUTE1
V+5R8E
Q6009
2SC2411K(QR)-TLB
V+5R1
Q6008
RN4903-TRB
R6316
470
Q6008
RN4903-TRB
P_CONT
C6647
C6425
C6649
100/10
C6427
C6428
0.1/16
YB
F 3/4 CN2301
V+5R8E
Q302
2SA1036K(QR)-TLB
Q303
2SC2411K(QR)-TLB
V+5VI
C314
R310
R312
100
R311
(SC12)
C321
C322
C323
100/16
C324
C325
R313
0
(2125)
XP_SAVE
1-A2,1-D5
C347
Q307
DTC124EUA-TLB
V+5VO
SW+12R1V
V+12R1SW
R202 ***
Q310
2SC4081(QR)-TLB
R317
100
C349
C350
C351
1000/16
YF
GND
V+12R1E
Q811
2SA1036K(QR)-TLB
Q812
2SC2411K(QR)-TLB
V+9V
R811
1K
C810
0.1
L810
SSS-TRB
D811
D810
C811
0
C813
1000
1-A2,1-C5
XP_SAVE
Q810
DTC124EUA-TLB
UDZS8R1(B)-TRB
RN4903
C B2 E2
VC
E B C2
A 1/4

3.4 TUJB ASSY (2/4)

A 2/4 TUJB ASSY(2/4)
(VXX3109 : DVR-640H-AV)
(VXX3108 : DVR-540H-S)

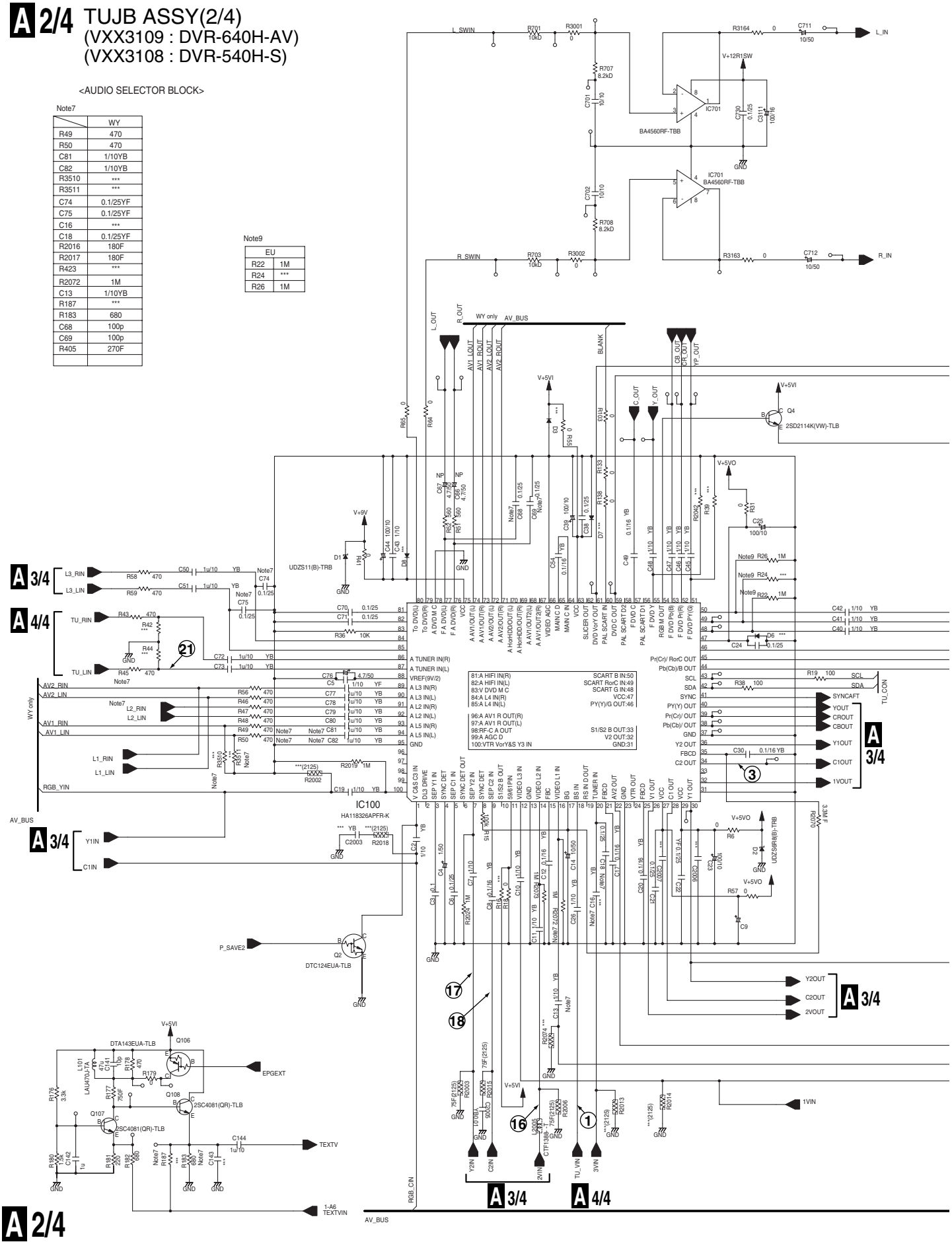
<AUDIO SELECTOR BLOCK>

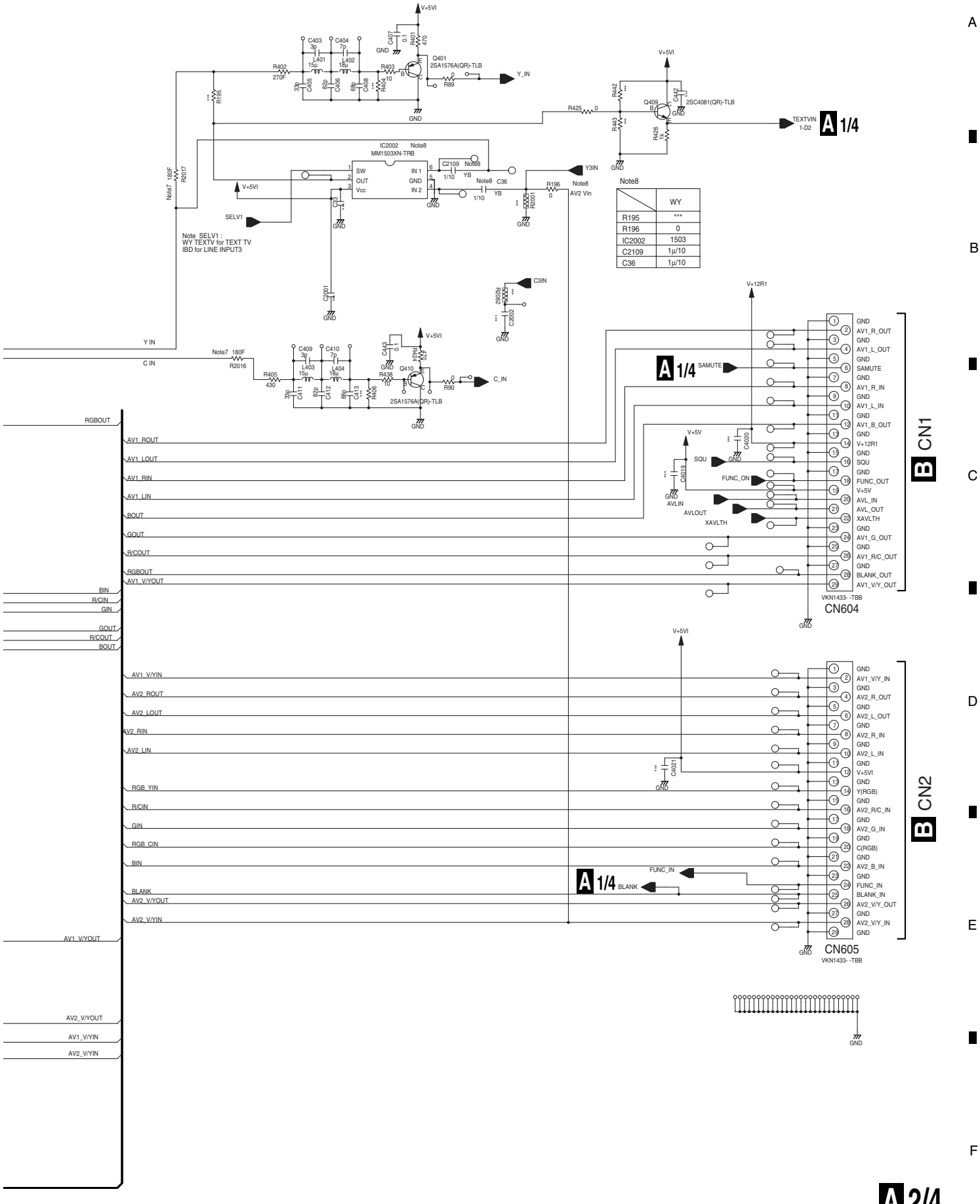
Note7

	WY
R49	470
R50	470
C81	1/10YB
C82	1/10YB
R3510	***
R3511	***
C74	0.1/25YF
C75	0.1/25YF
C16	***
C18	0.1/25YF
R2016	180F
R2017	180F
R423	***
R2072	1M
C13	1/10YB
R187	***
R183	680
C68	100p
C69	100p
R405	270F

Note9

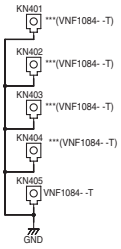
EU	
R22	1M
R24	***
R26	1M

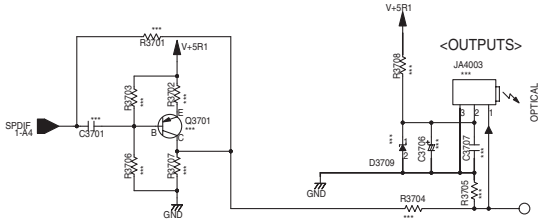


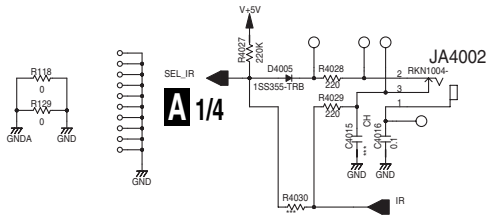


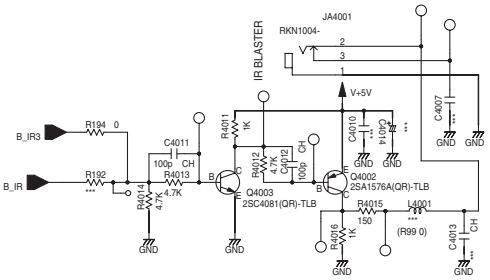
	WY
R195	***
R196	0
IC2002	1503
C2109	1µ/10
C36	1µ/10

3.5 TUJB ASSY(3/4)



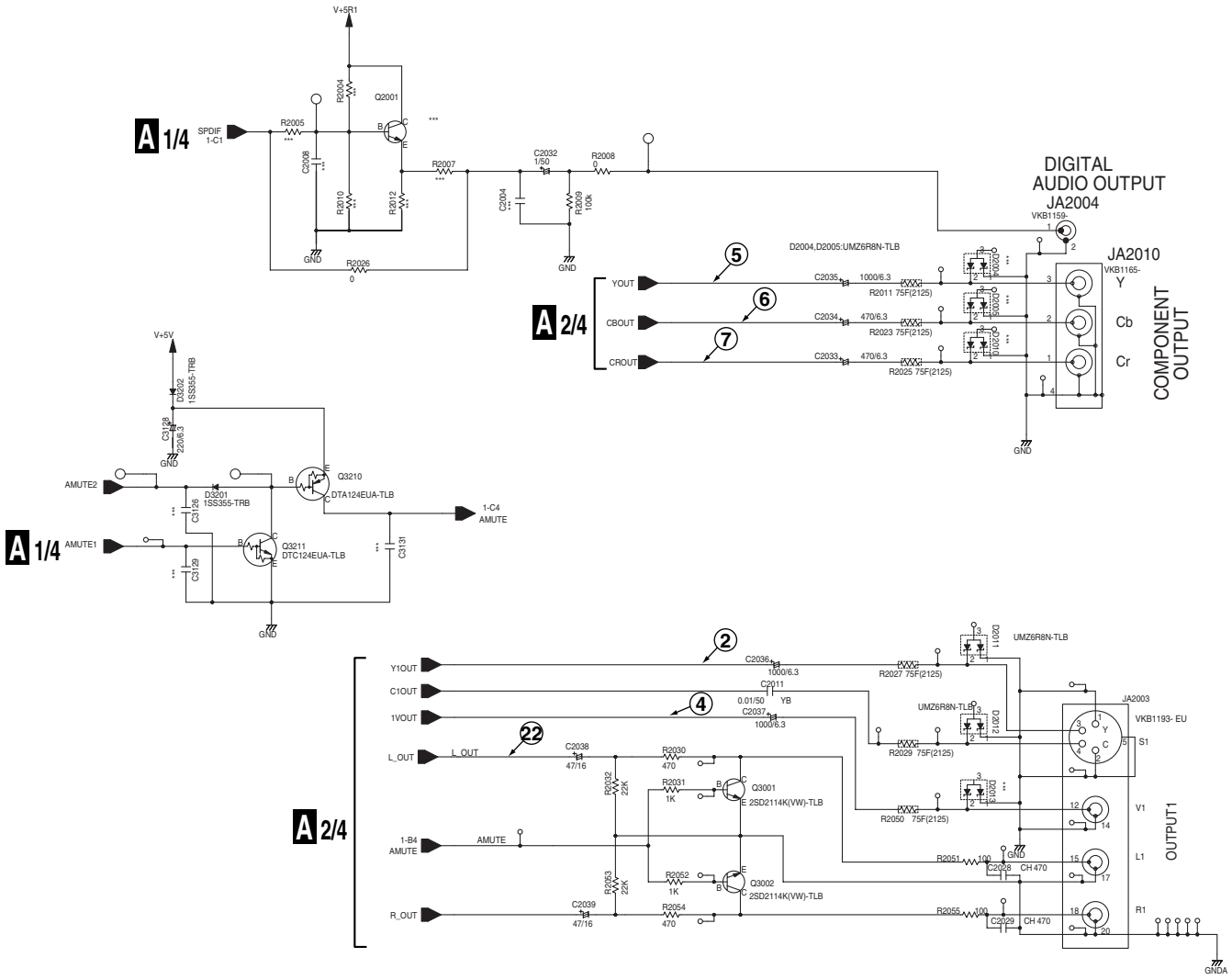






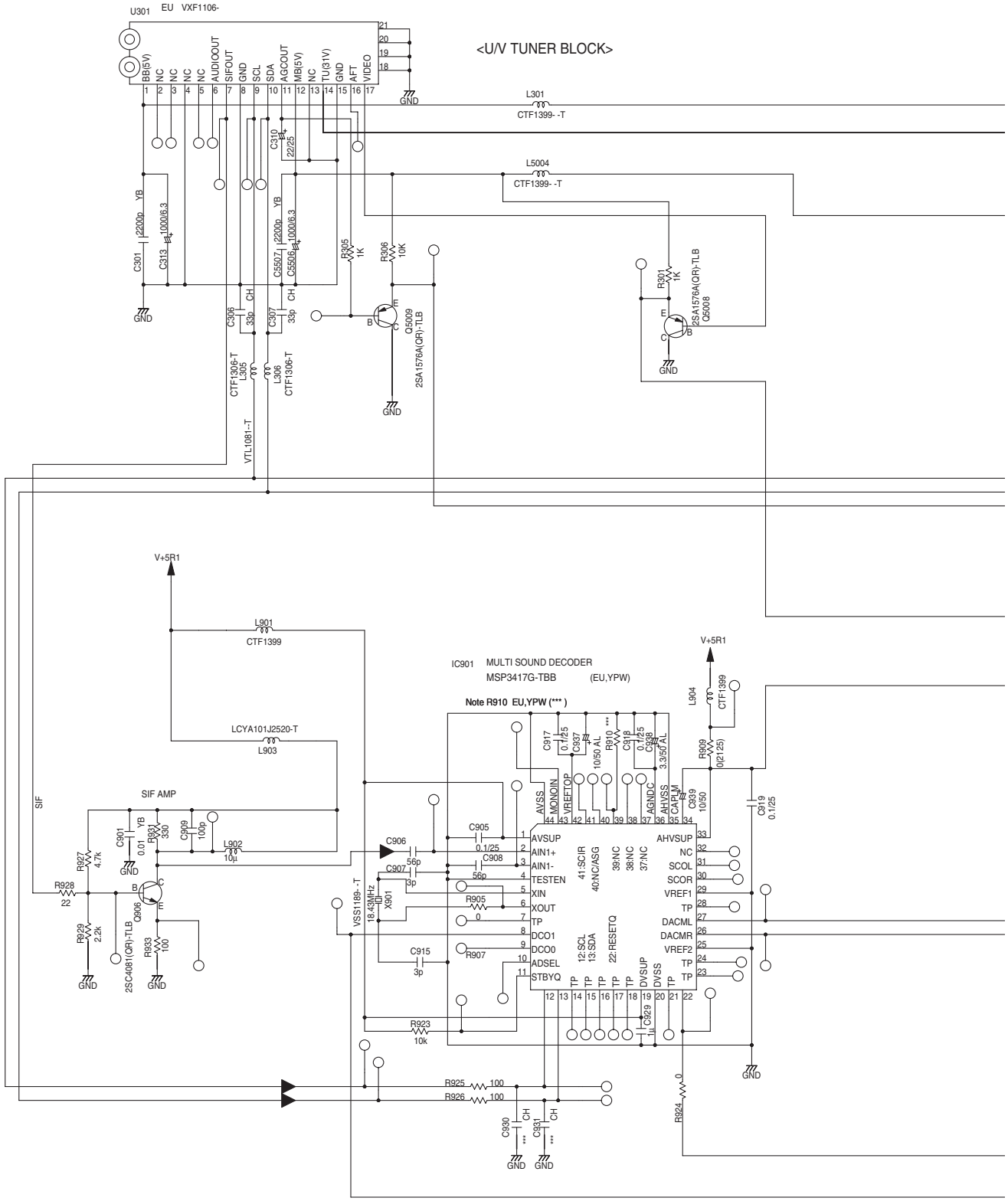
A 3/4

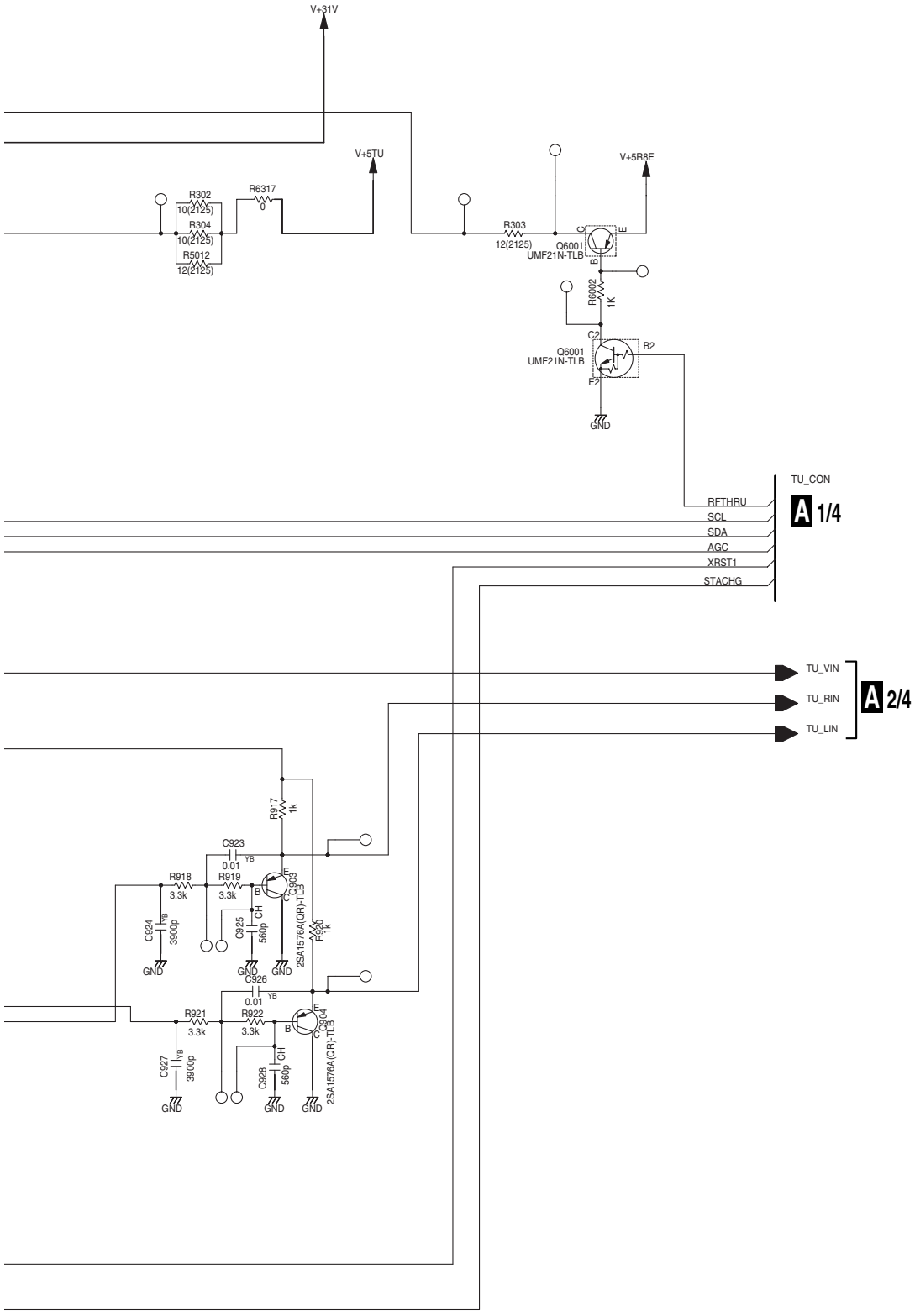
A 3/4 TUJB ASSY(3/4)
(VXX3109 : DVR-640H-AV)
(VXX3108 : DVR-540H-S)



3.6 TUJB ASSY(4/4)

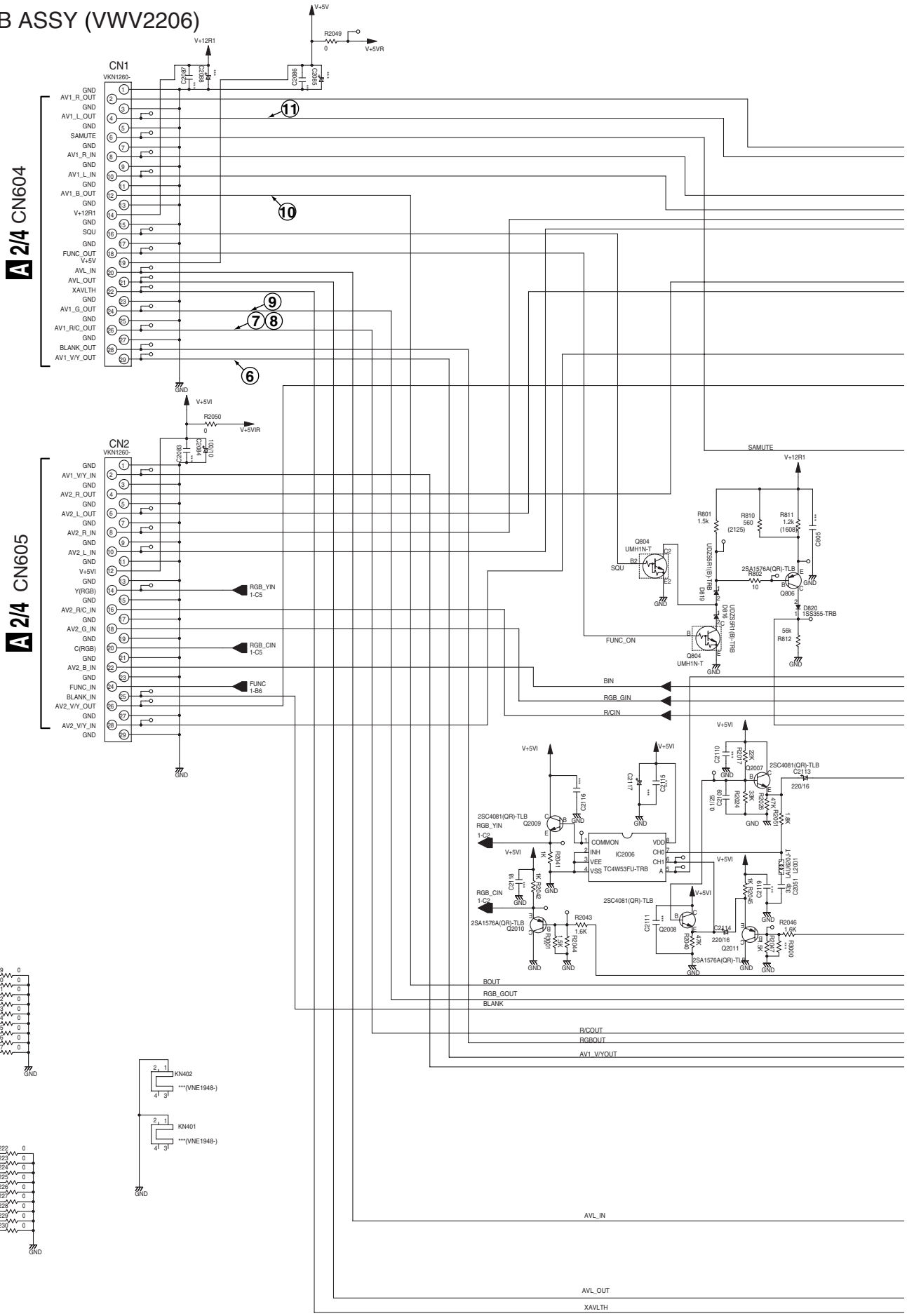
A 4/4 TUJB ASSY(4/4)
(VXX3109 : DVR-640H-AV)
(VXX3108 : DVR-540H-S)

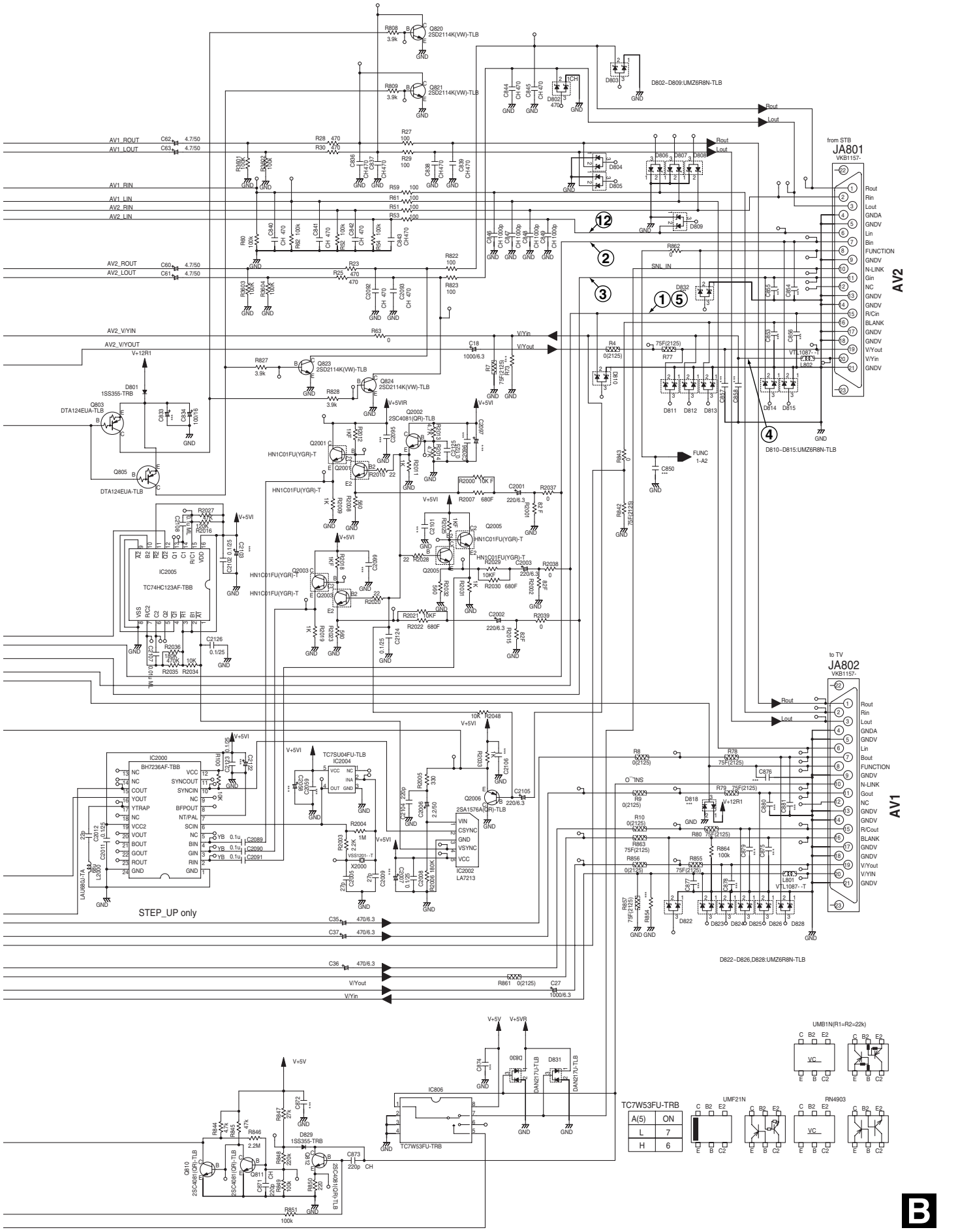



V+31V
V+5TU
V+5R8E
R302
10(2125)
R304
10(2125)
R5012
12(2125)
R6317
0
R303
12(2125)
Q6001
UMF21N-TLB
R6002
1K
C2
B2
E2
GND
TU_CON
RETHRU
SCL
SDA
AGC
XRST1
STACHG
A 1/4
TU_VIN
TU_RIN
TU_LIN
A 2/4
R917
1k
C923
0.01
YB
R918
3.3k
R919
3.3k
Q902
2SA1576A(QR)-TLB
C924
3900p
B
C925
560p
CH
R920
1k
C926
0.01
YB
R921
3.3k
R922
3.3k
Q904
2SA1576A(QR)-TLB
C927
3900p
C928
560p
UMF21N
A 4/4

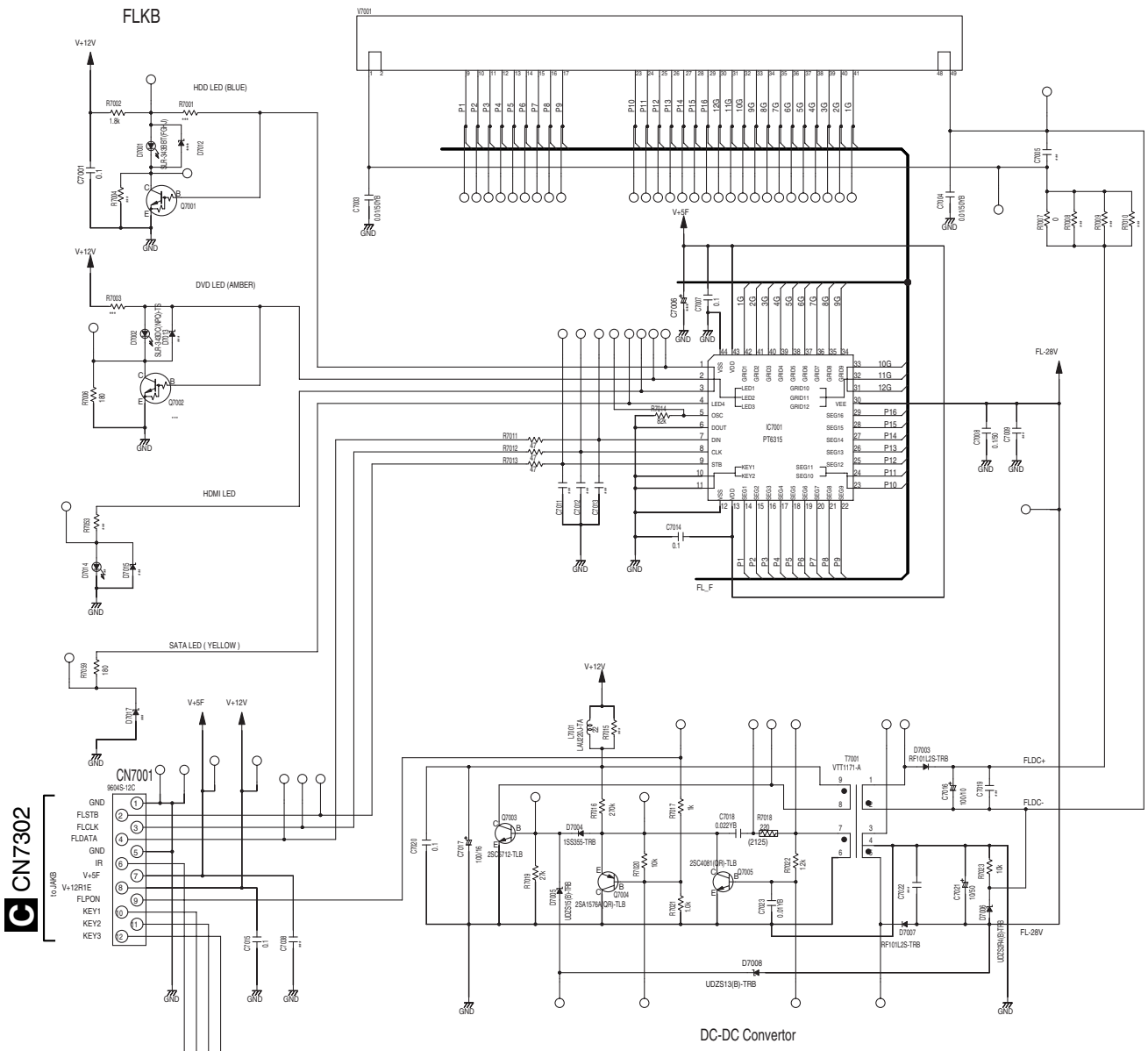
3.7 SCRB ASSY

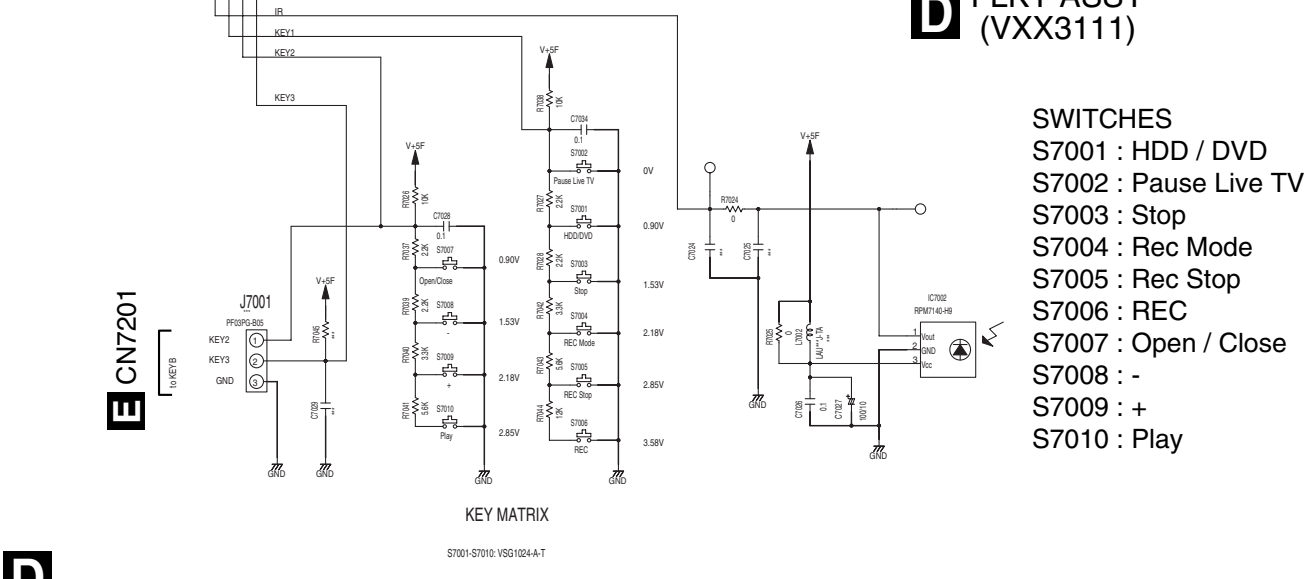
B SCRB ASSY (VWV2206)




AV1_ROUT
AV1_LOUT
AV1_RIN
AV1_LIN
AV2_RIN
AV2_LIN
AV2_ROUT
AV2_LOUT
AV2_V/YIN
AV2_V/YOUT
V+12R1
V+5VI
V+5VIR
V+5V
V+5VR
GND
Q820 2SD2114K(VW)-TLB
Q821 2SD2114K(VW)-TLB
Q823 2SD2114K(VW)-TLB
Q824 2SD2114K(VW)-TLB
Q803 DTA124EUA-TLB
Q805 DTA124EUA-TLB
D801 1SS355-TRB
Q2002 2SC4081(QR)-TLB
Q2001 HN1C01FU(YGR)-T
Q2003 HN1C01FU(YGR)-T
Q2005 HN1C01FU(YGR)-T
Q2006 2SA1576A(QR)-TLB
IC2000 BH7236AF-TBB
IC2004 TC7SU04FU-TLB
IC2005 TC74HC123AF-TBB
IC2002 LA7213
IC806 TC7W53FU-TRB
D802~D809:UMZ6R8N-TLB
D810~D815:UMZ6R8N-TLB
D822~D826,D828:UMZ6R8N-TLB
D829 1SS355-TRB
D830 DAN217U-TLB
D831 DAN217U-TLB
from STB
JA801
VKB1157-
to TV
JA802
VKB1157-
AV2
AV1
FUNC 1-A2
SNL_IN
STEP_UP only
Rout
Rin
Lout
GNDA
GNDV
Lin
Bin
FUNCTION
N-LINK
Gin
NC
R/Cin
BLANK
V/Yout
V/Yin
Bout
Gout
R/Cout
L801 VTL1087-T
L802 VTL1087-T
UMB1N(R1=R2=22k)
UMF21N
RN4903
TC7W53FU-TRB
A(5) ON
L 7
H 6

3.8 FJKB, FLKY and KEYB ASSYS



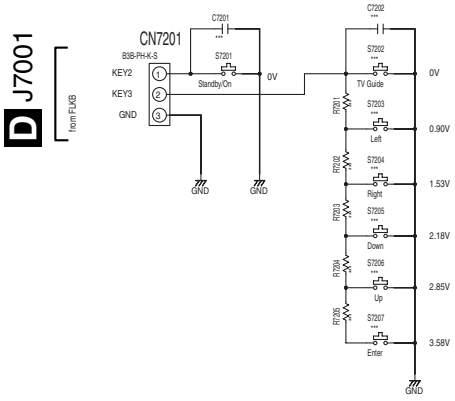


D FLKY ASSY (VXX3111)

S7001-S7010: VSG1024-A-T

E KEYB ASSY (VXX3112)

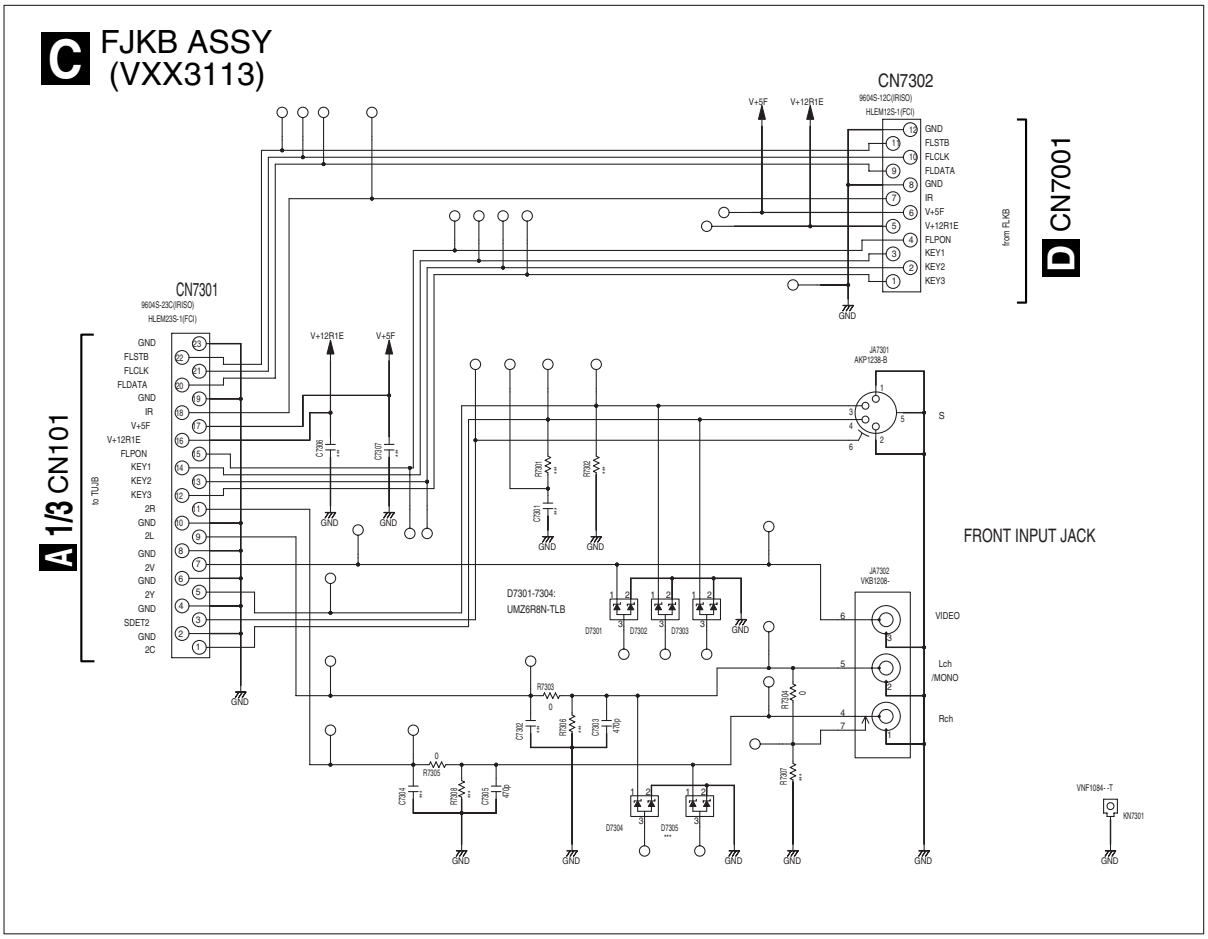
SWITCHES
S7201 : Standby / On



KEY MATRIX

S7201-S7207: VSG1024-A-T

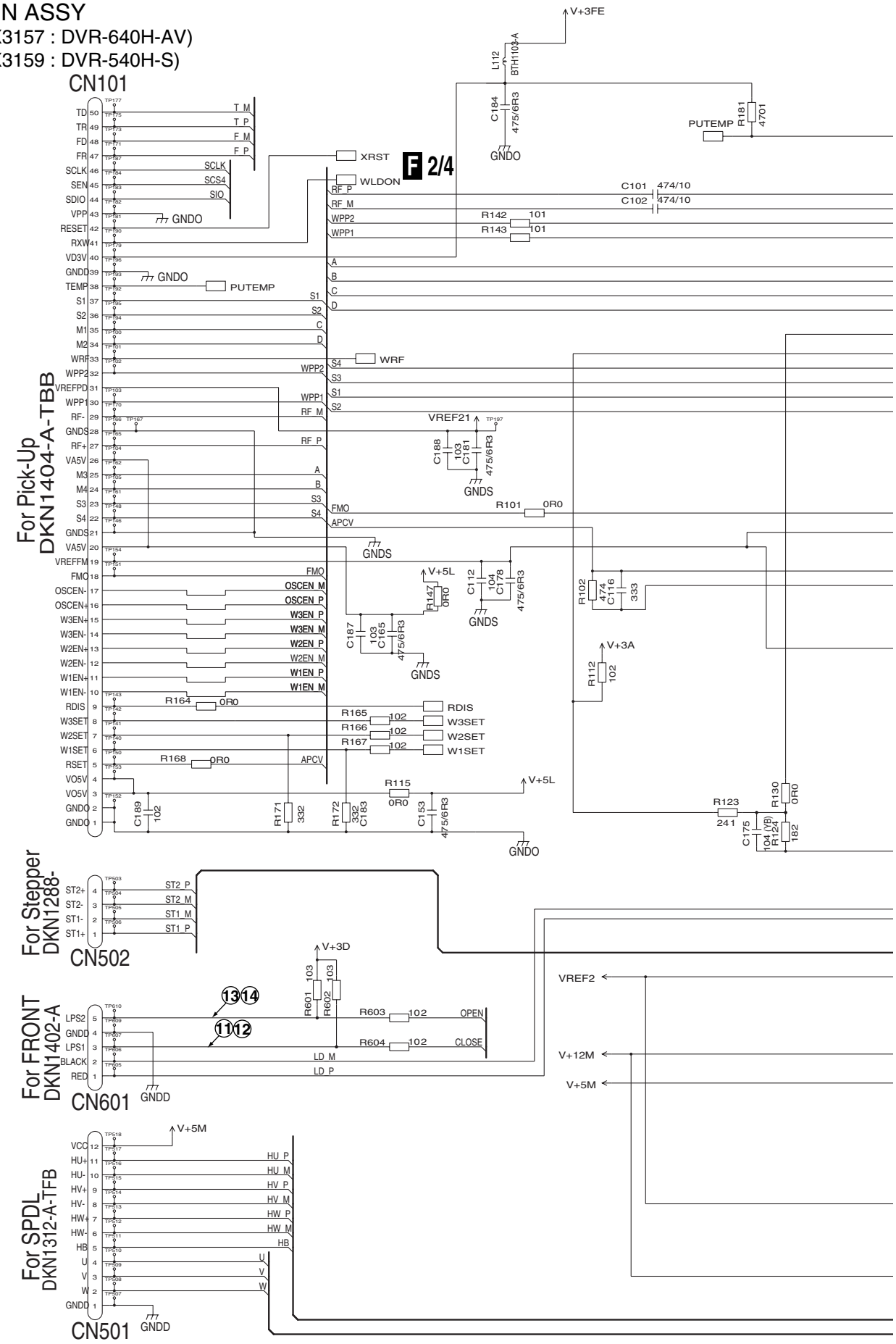
C FJKB ASSY (VXX3113)



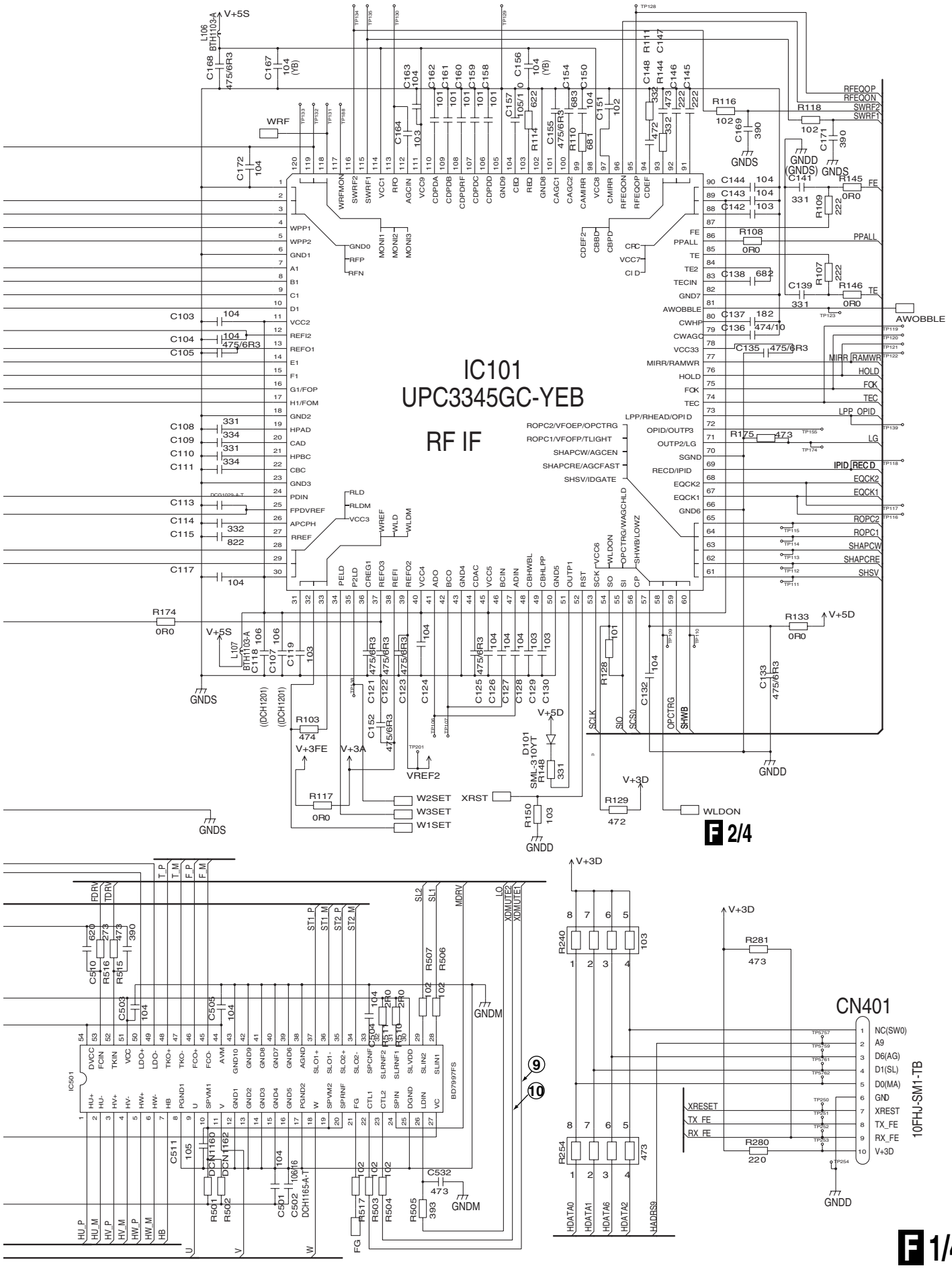
3.9 MAIN ASSY(1/4)

F 1/4 MAIN ASSY

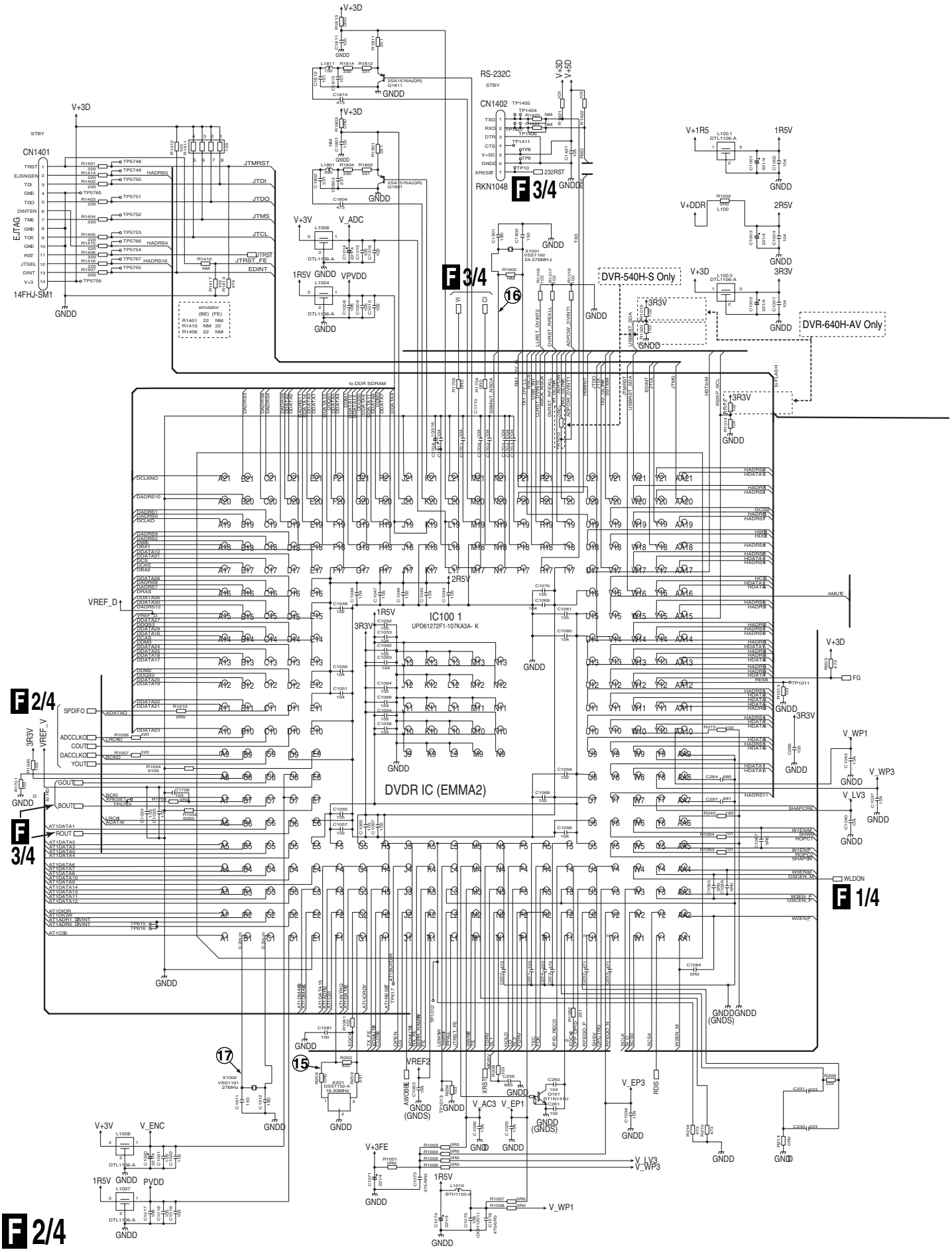
(VXX3157 : DVR-640H-AV)
(VXX3159 : DVR-540H-S)



F 1/4

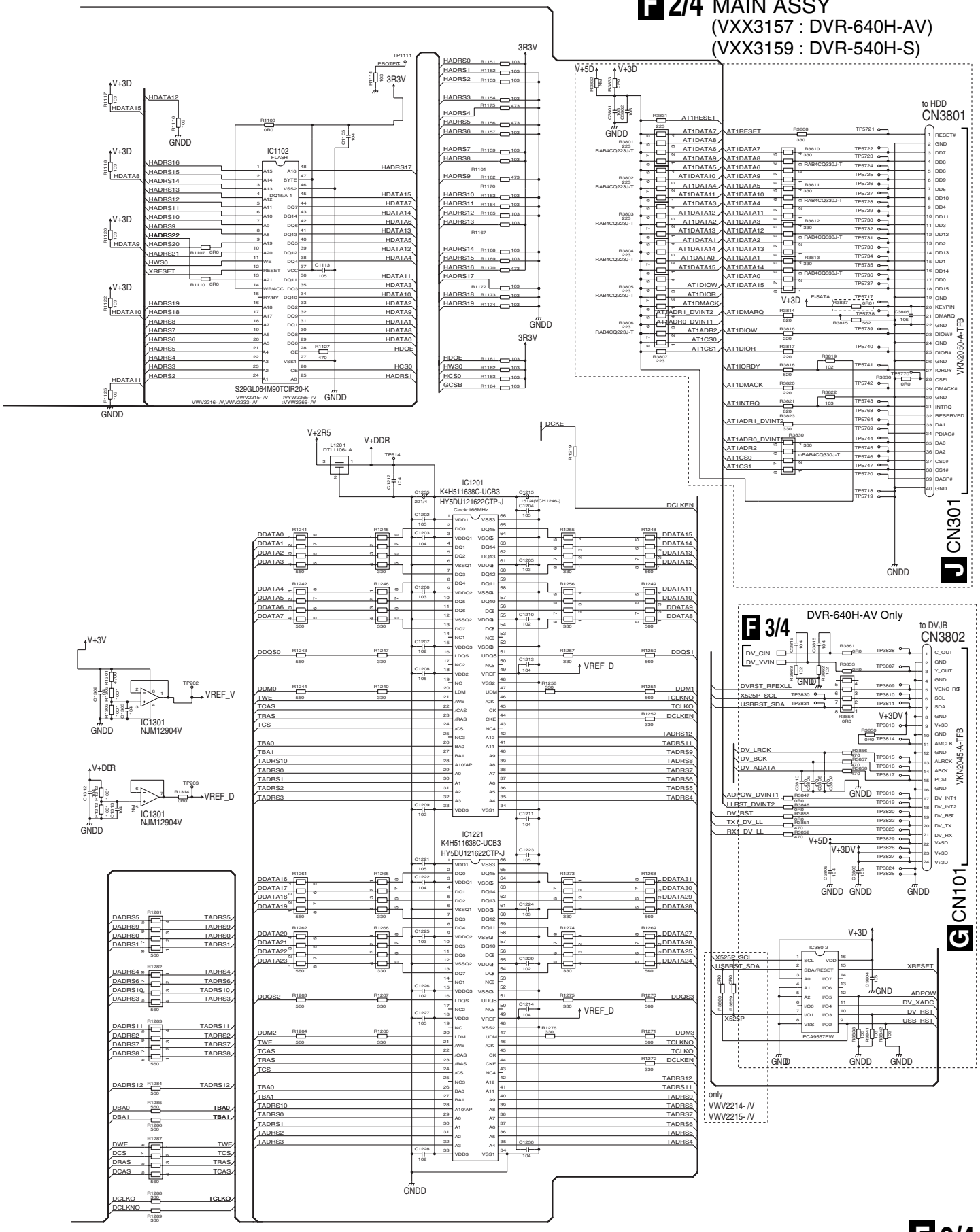

IC101
UPC3345GC-YEB
RF IF
F 2/4
F 1/4
CN401
10FHJ-SM1-TB
IC501
BD7997FS
DCH1165A-T
V+5S
V+3D
V+3A
V+3FE
V+5D
GNDS
GNDD
GNDM
WRF
VREF2
W2SET
W3SET
W1SET
XRST
WLDON
AWOBBLE
XRESET
TX_FE
RX_FE

3.10 MAIN ASSY(2/4)

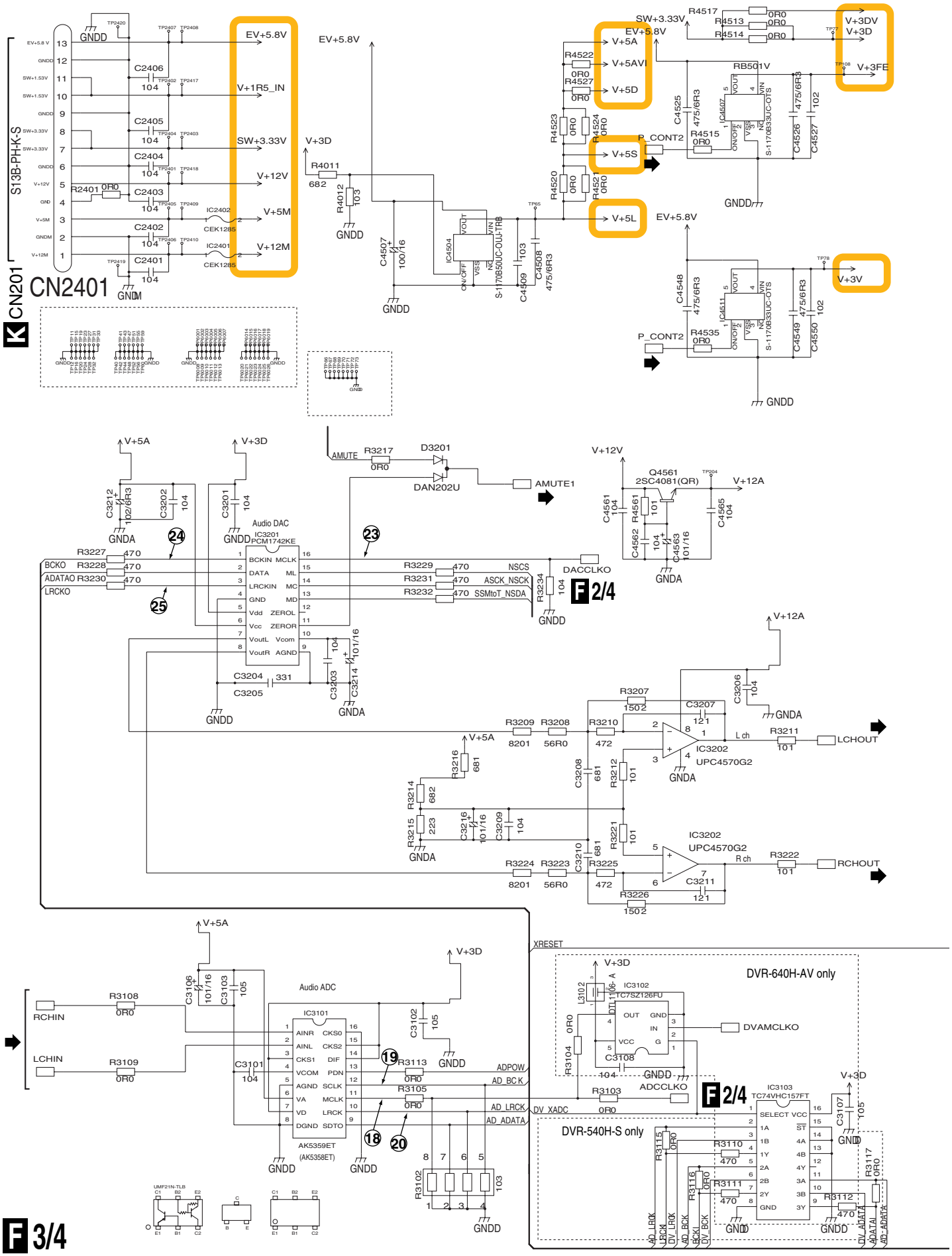


F 2/4 MAIN ASSY

(VXX3157 : DVR-640H-AV)
(VXX3159 : DVR-540H-S)



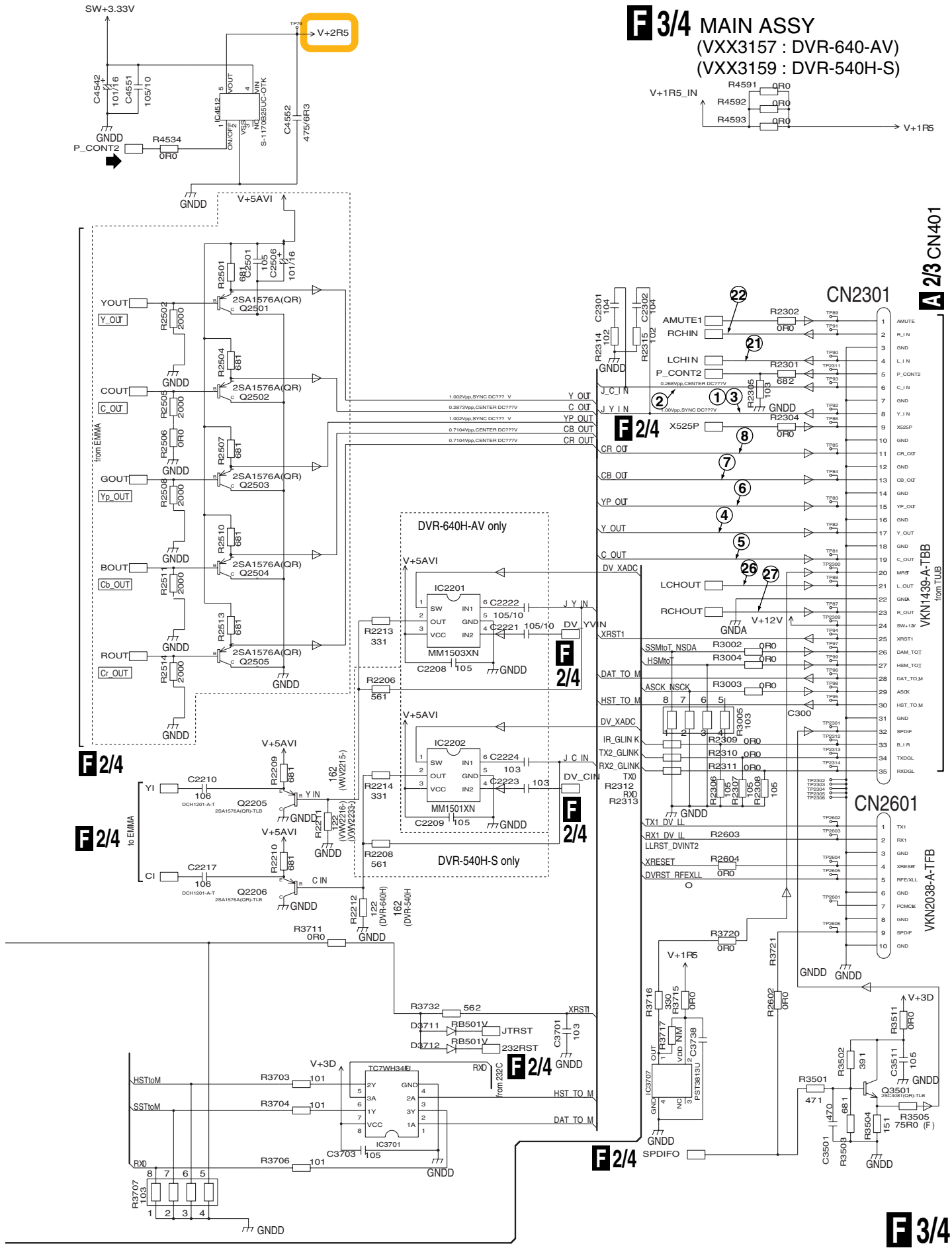
3.11 MAIN ASSY(3/4)



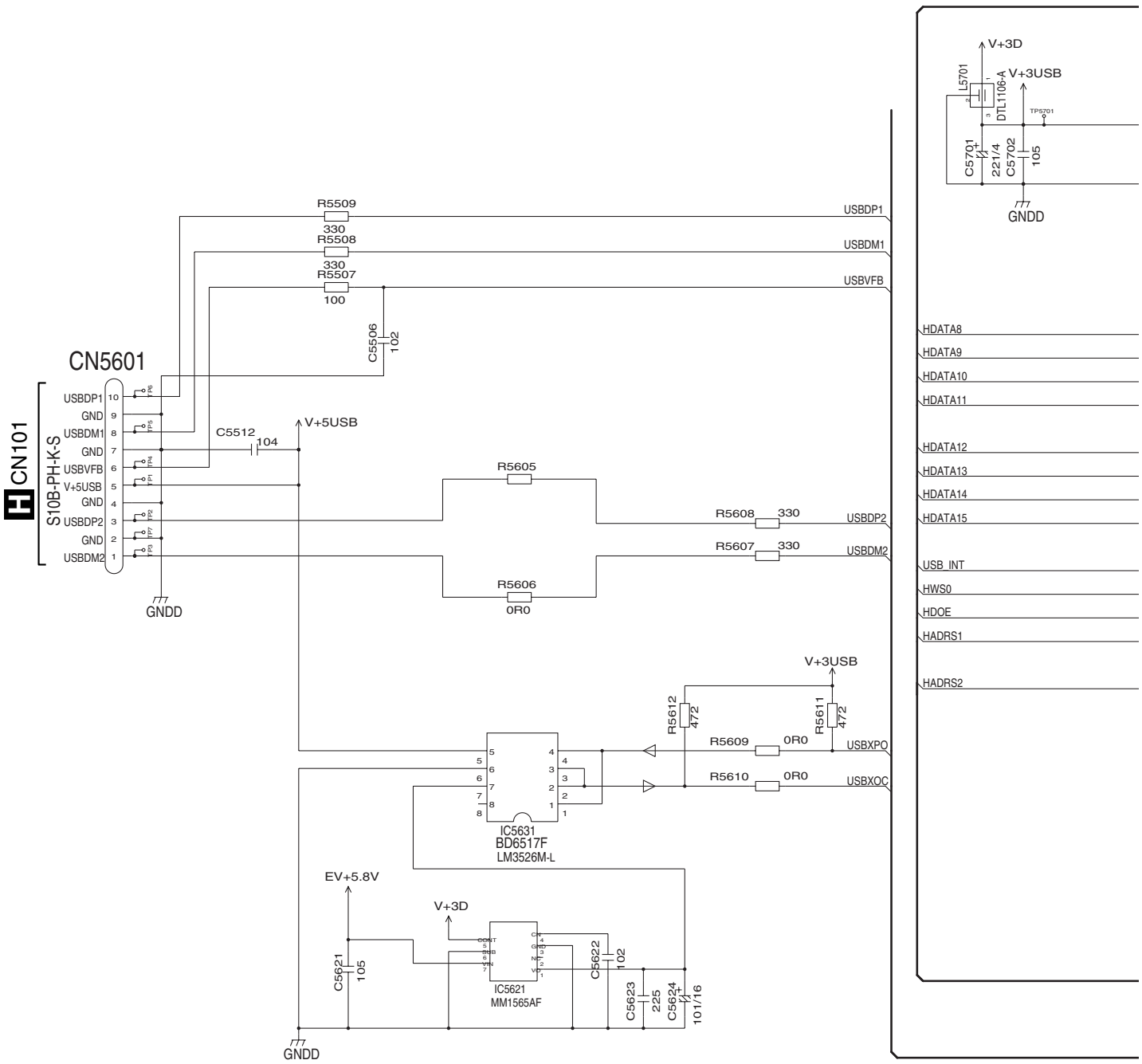
F 3/4 MAIN ASSY

(VXX3157 : DVR-640-AV)

(VXX3159 : DVR-540H-S)



3.12 MAIN ASSY(4/4)

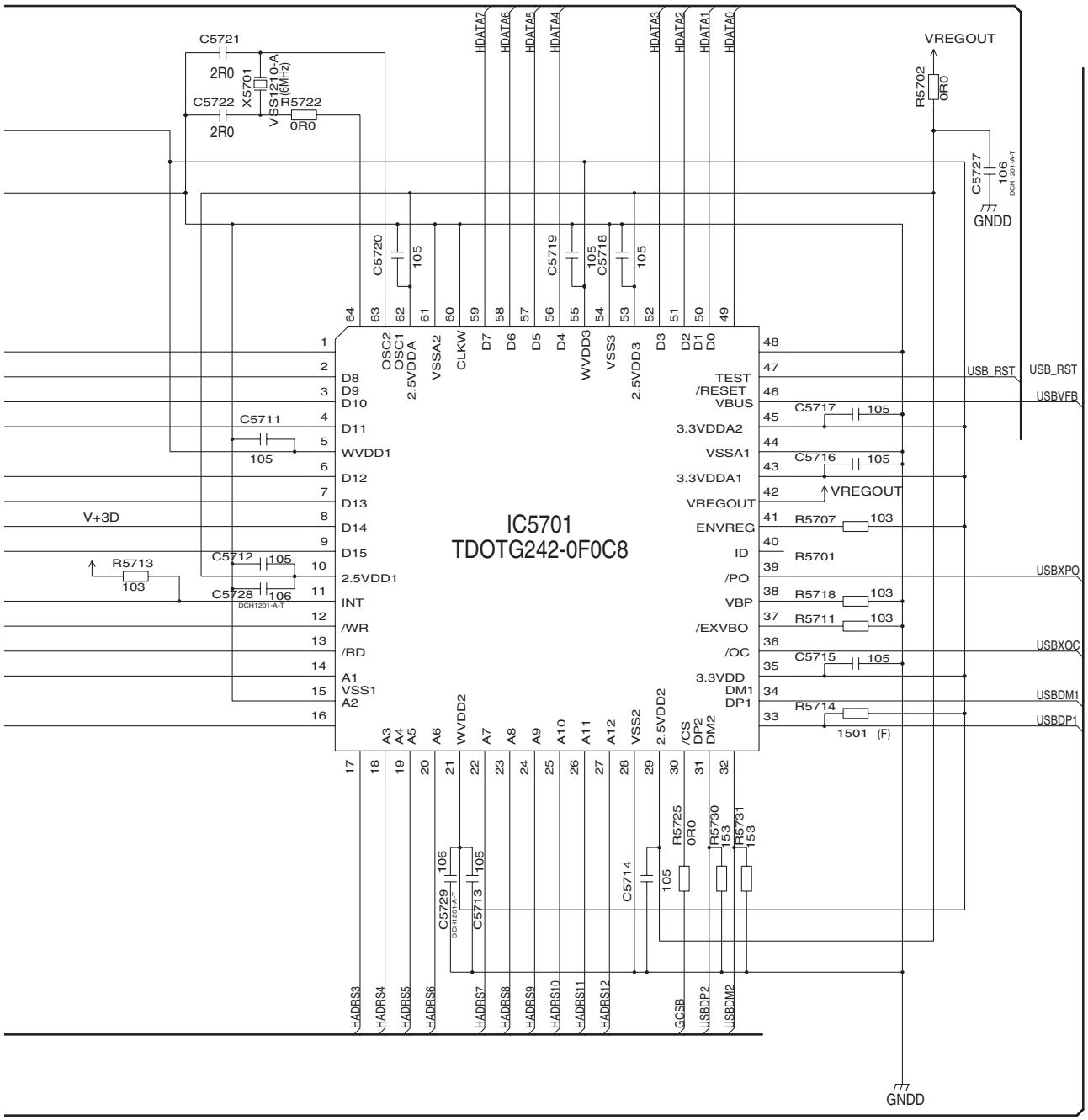


F 4/4

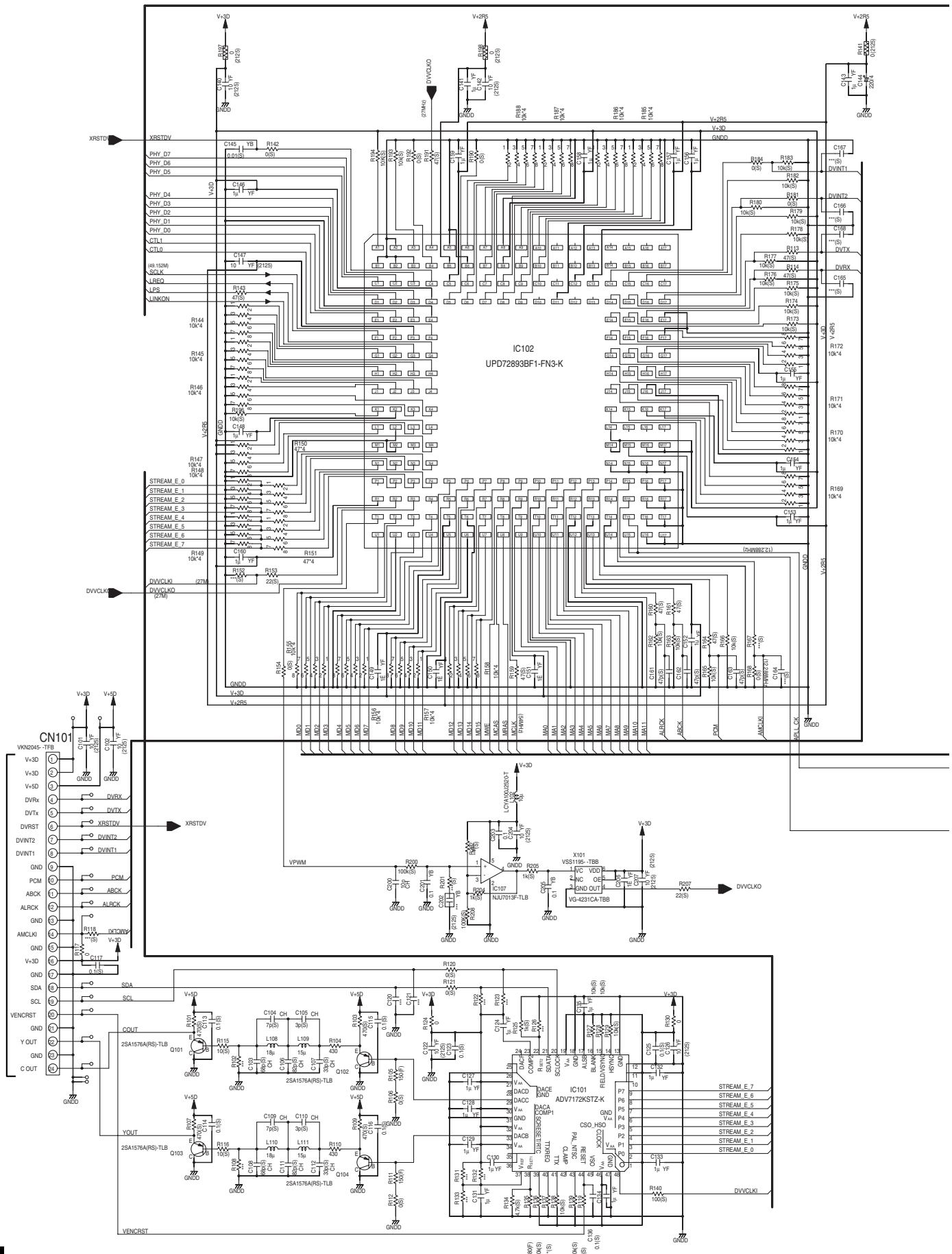
F 4/4 MAIN ASSY

(VXX3157 : DVR-640H-AV)
(VXX3159 : DVR-540H-S)

This block is only for DVR-640H-AV.

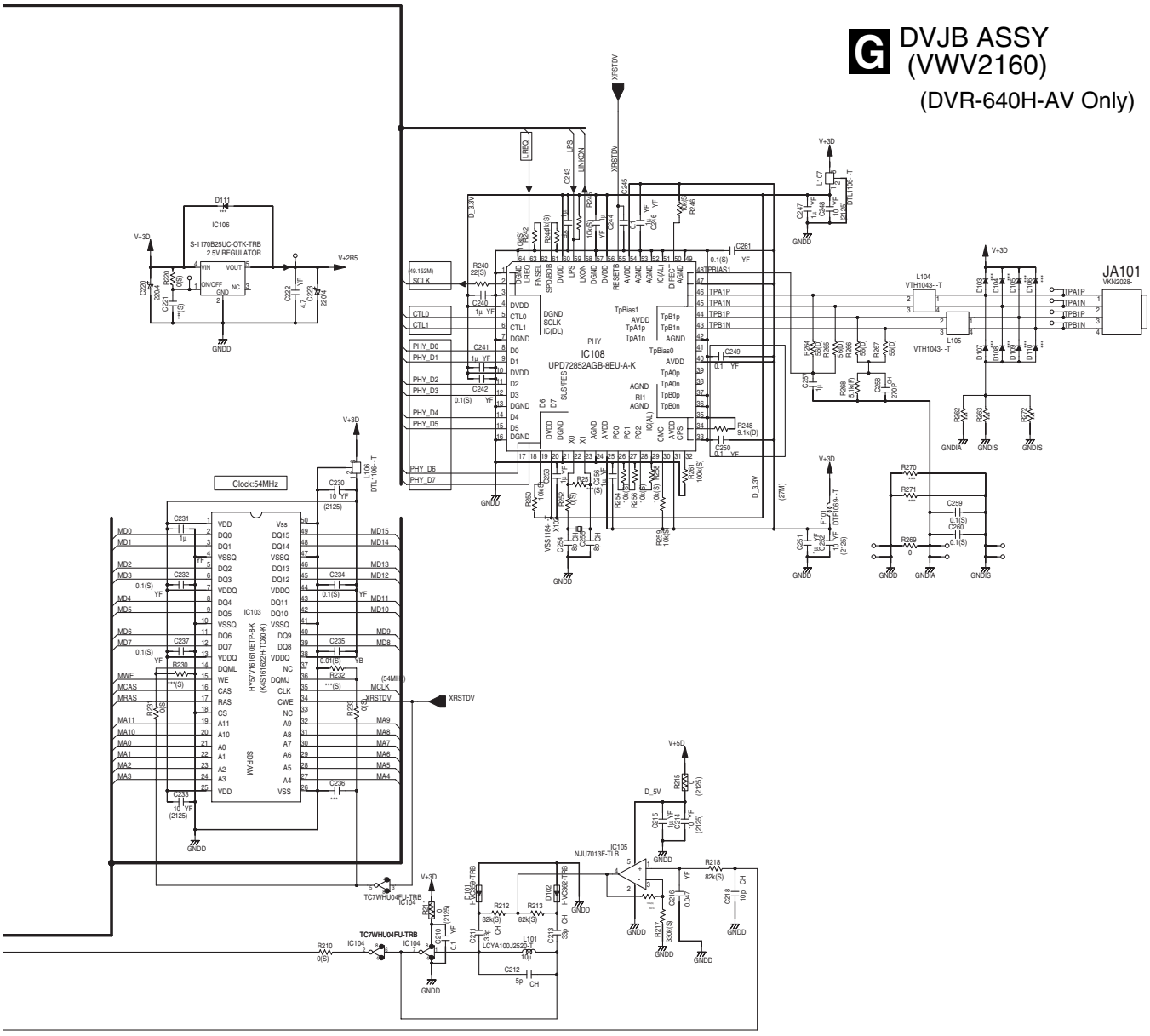


3.13 DVJB ASSY (DVR-640H-AV Only)

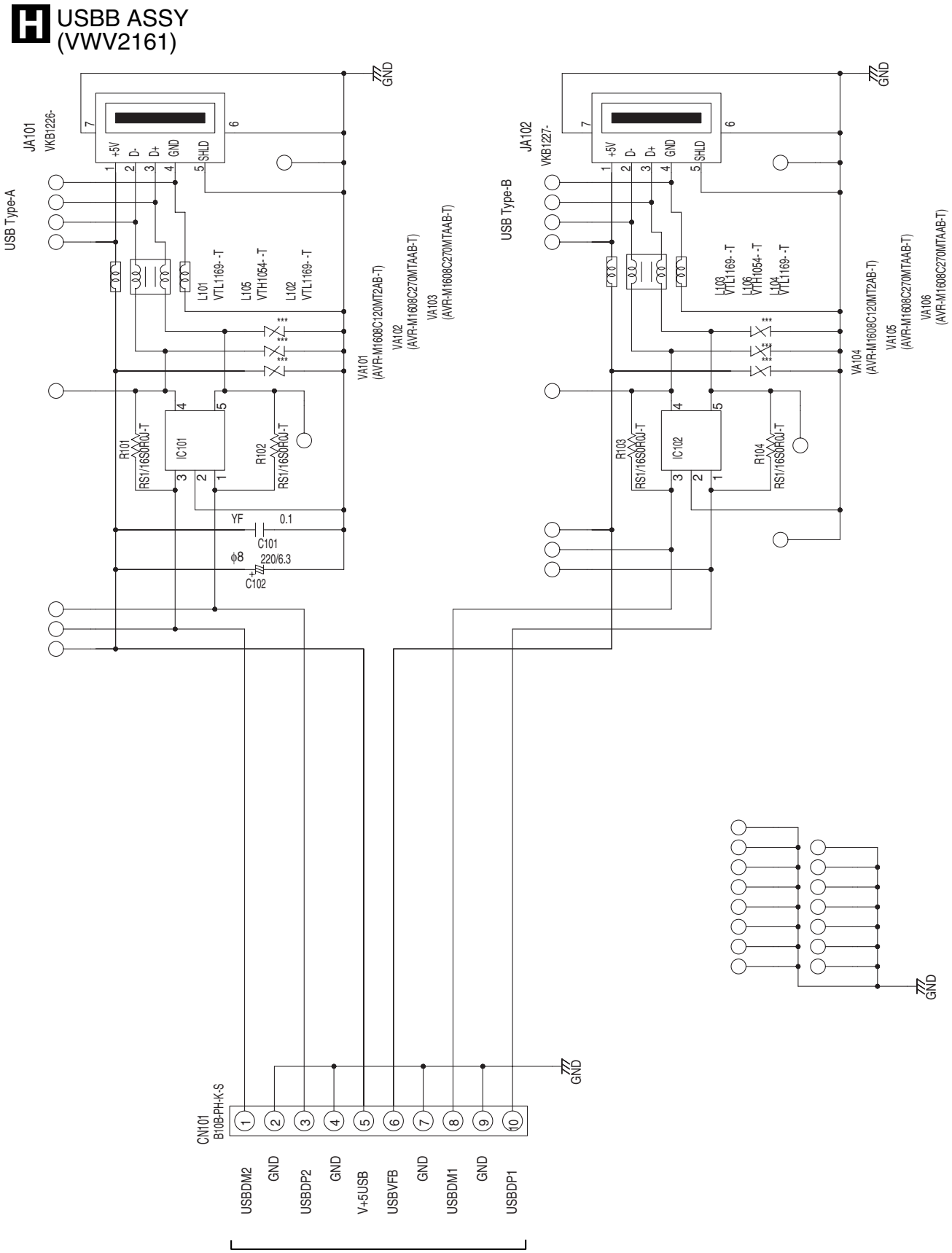


G DVJB ASSY (VWV2160)

(DVR-640H-AV Only)

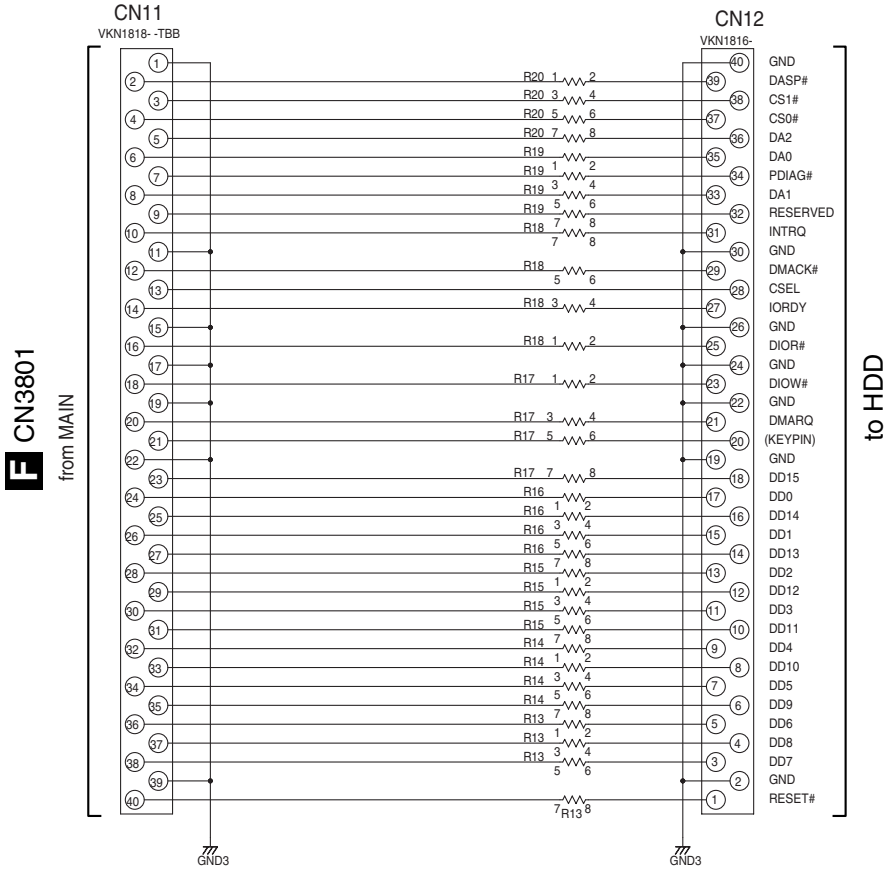


3.14 USBB ASSY (DVR-640H-AV Only)



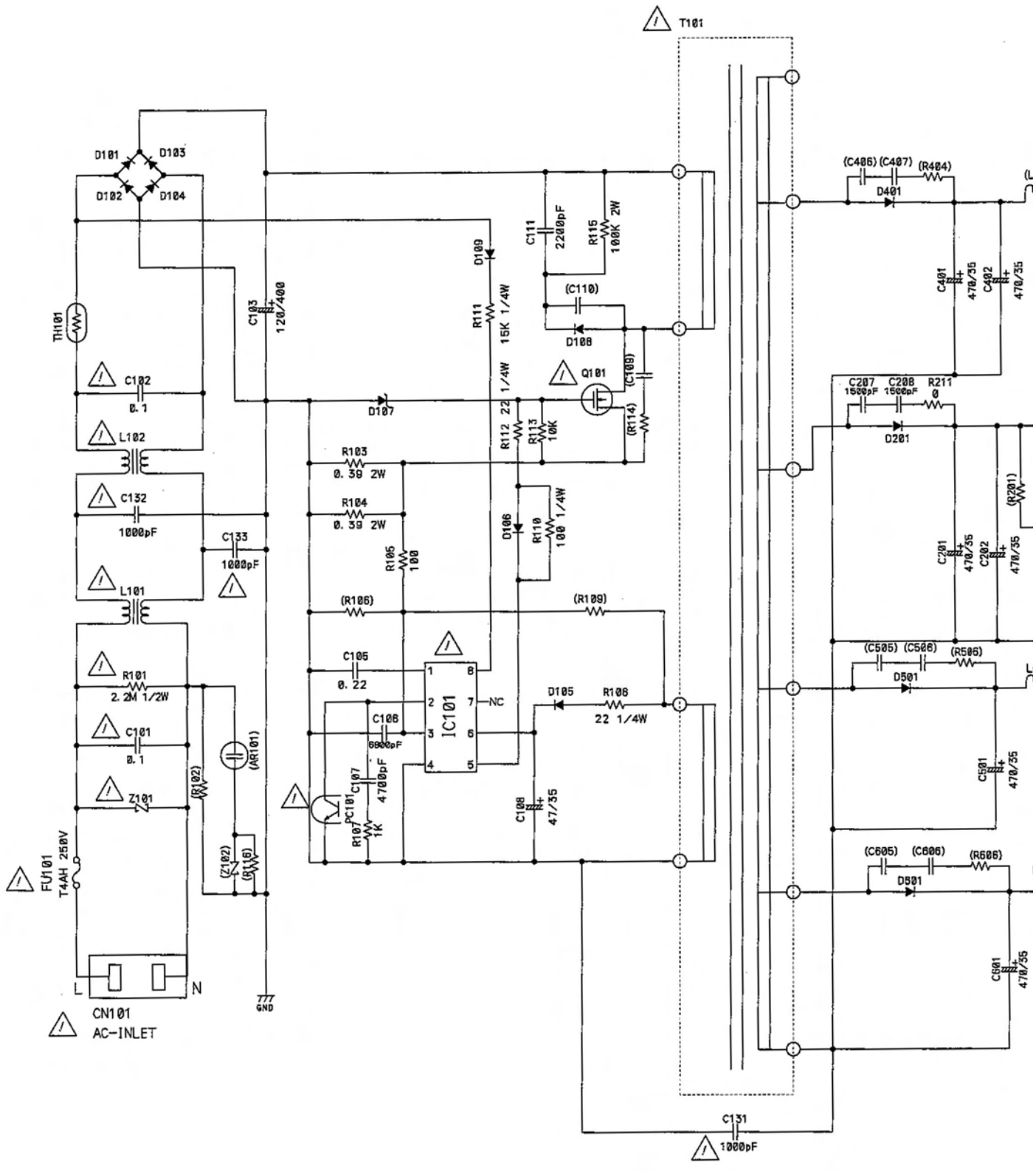
3.15 ATAB ASSY

I ATAB ASSY (VXX3140)

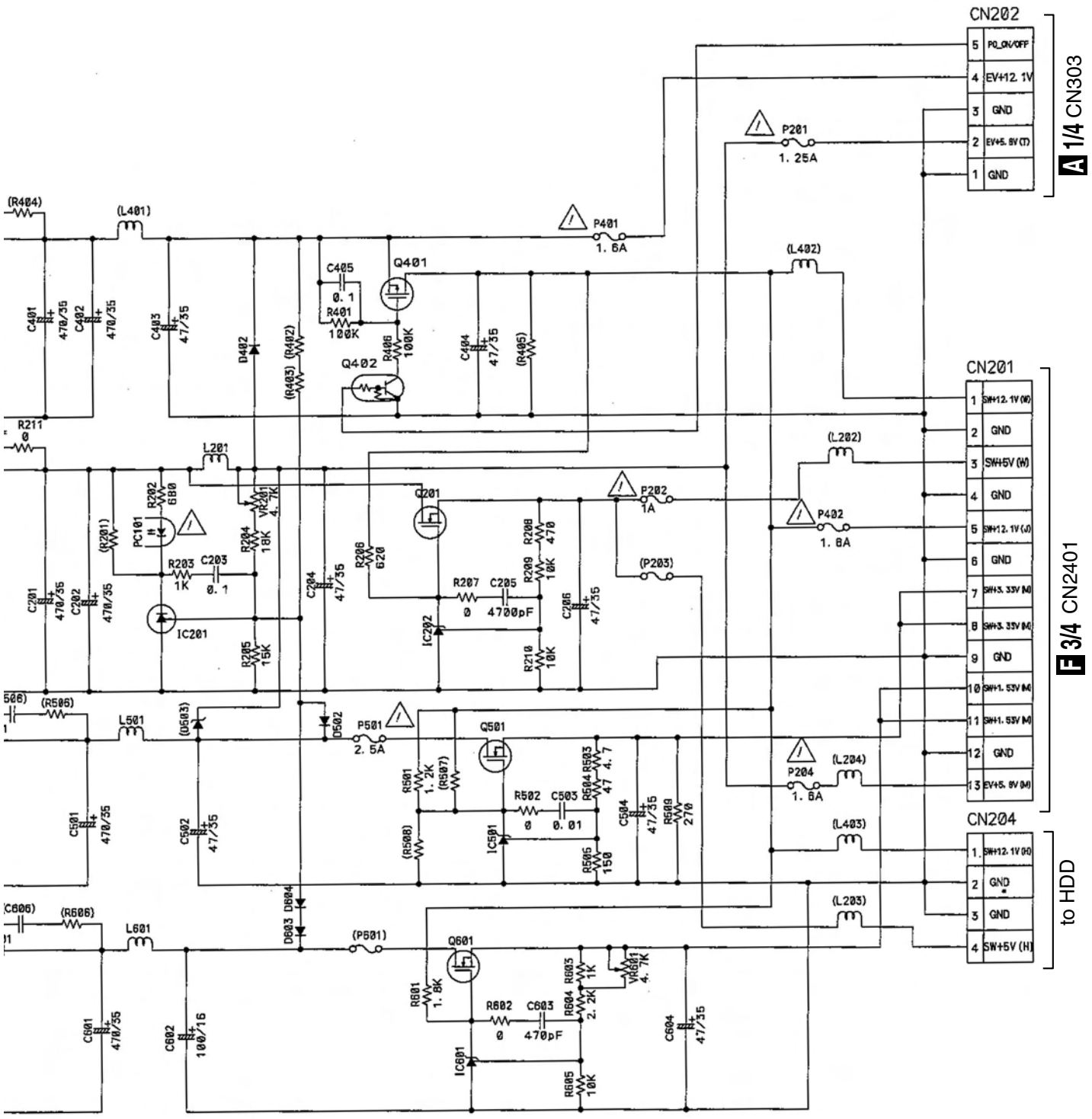


3.16 POWER SUPPLY UNIT

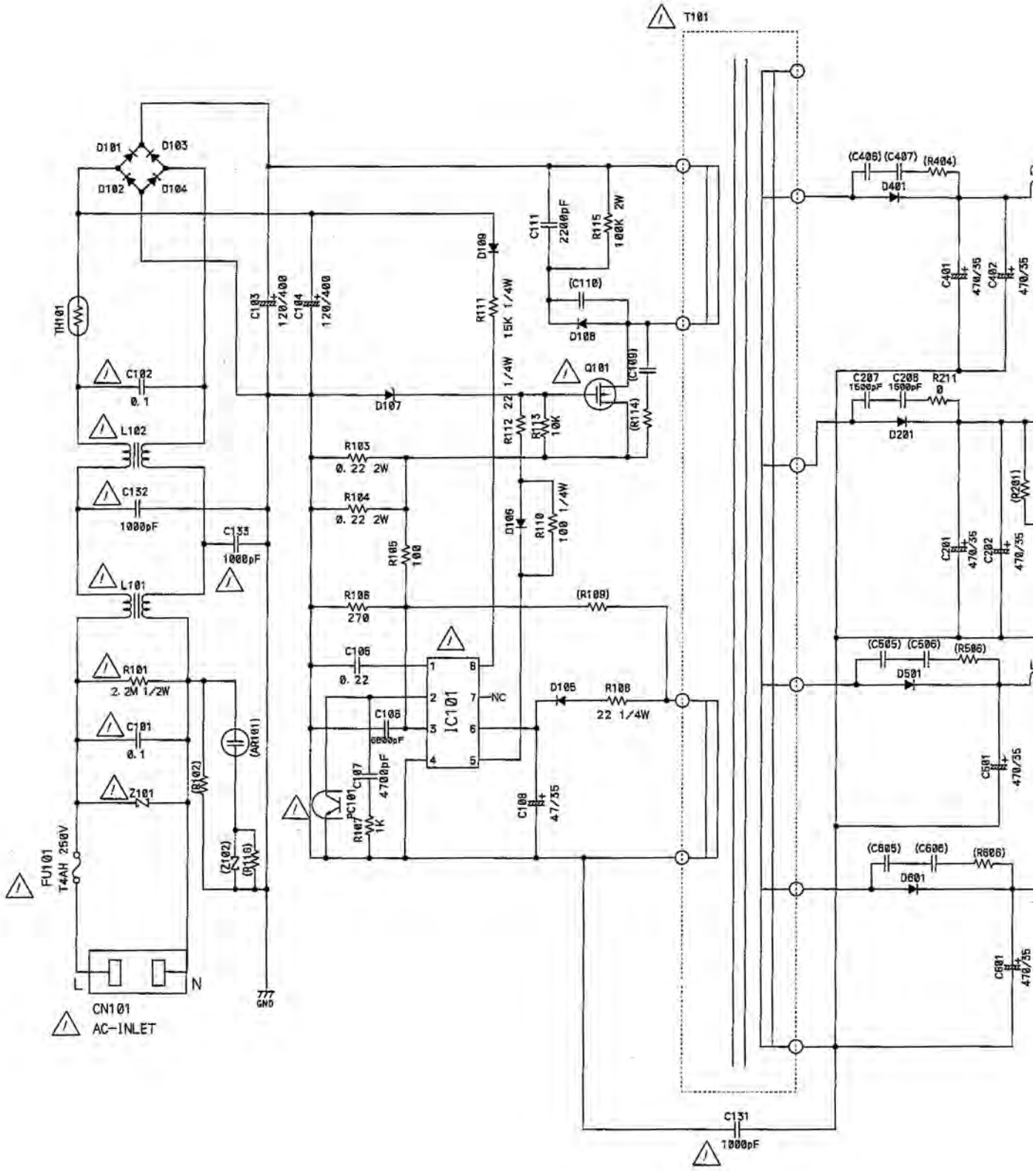
J POWER SUPPLY UNIT (VWR1399)



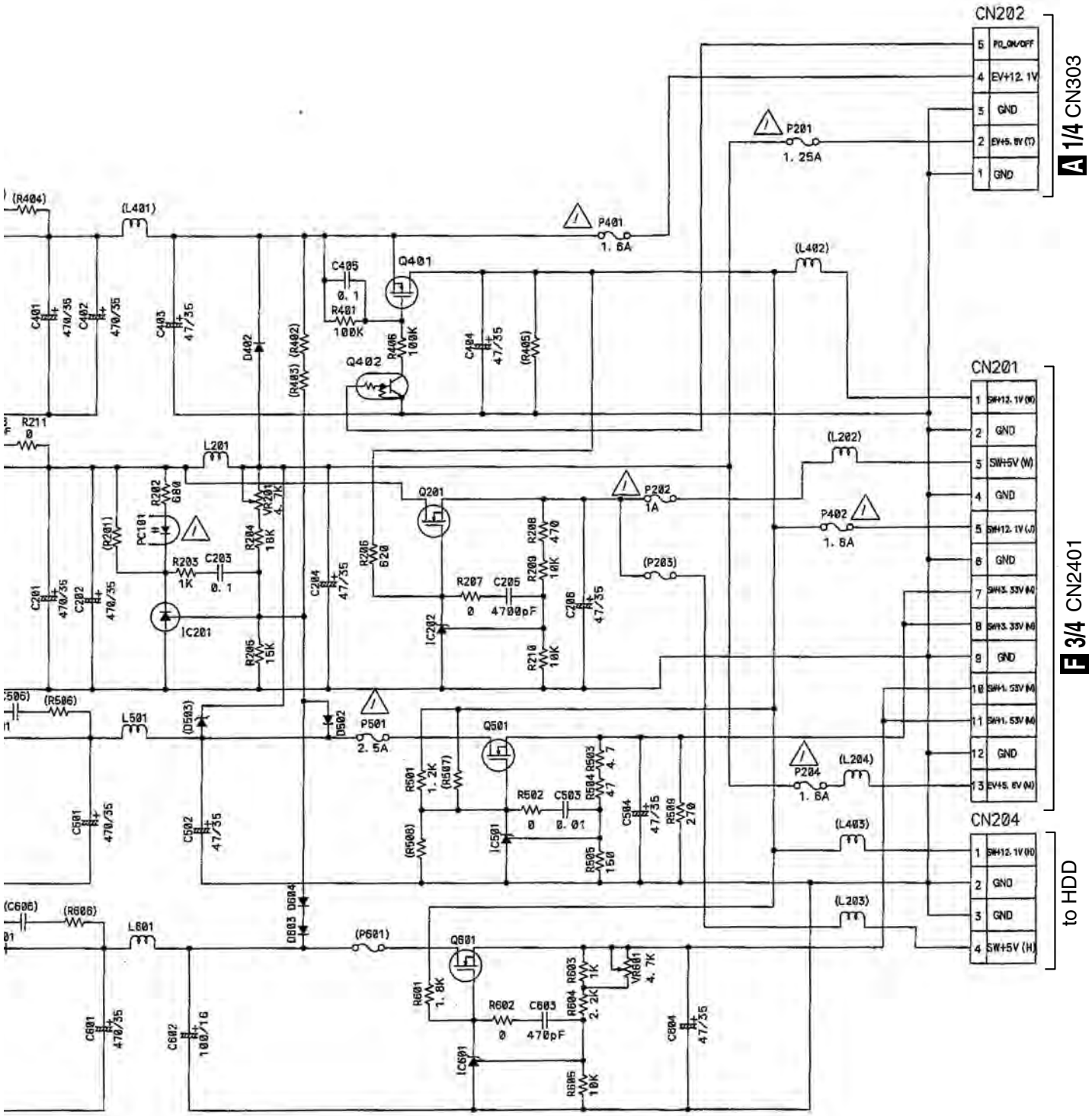
Unit	Resistor	Ω/W (under 1/4W for no direction W
	Capacitor	μF/V (under 50V for no direction V


CN202
5 PO_ON/OFF
4 EV+12. 1V
3 GND
2 EV+5. 8V (T)
1 GND
A 1/4 CN303
P201
1. 25A
P401
1. 6A
(R404)
(L401)
(L402)
C405
0. 1
Q401
R401
100K
R406
100K
Q402
C401
470/35
C402
470/35
C403
47/35
C404
47/35
D402
(R402)
(R403)
(R405)
CN201
1 SW+12. 1V (W)
2 GND
3 SW+5V (W)
4 GND
5 SW+12. 1V (J)
6 GND
7 SW+3. 3V (M)
8 SW+3. 3V (M)
9 GND
10 SW+1. 53V (M)
11 SW+1. 53V (M)
12 GND
13 EV+5. 8V (M)
F 3/4 CN2401
R211
0
L201
(L202)
P202
1A
P402
1. 8A
Q201
PC101
R202
680
VR201
4. 7K
R204
18K
(R201)
R203
1K
C203
0. 1
R206
620
R208
470
R209
10K
R207
0
C205
4700pF
(P203)
C201
470/35
C202
470/35
IC201
IC202
C204
47/35
C206
47/35
R205
15K
R210
10K
(R506)
L501
(D503)
D502
P501
2. 5A
Q501
R501
1. 2K
(R507)
R502
0
C503
0. 01
R503
4. 7
R504
47
C504
47/35
R509
270
(R508)
IC501
R505
150
C501
470/35
C502
47/35
P204
1. 6A
(L204)
CN204
1. SW+12. 1V (W)
2 GND
3 GND
4 SW+5V (H)
to HDD
(L403)
(L203)
(R606)
L601
D603
D604
(P501)
Q601
R601
1. 8K
R602
0
C603
470pF
R603
1K
R604
2. 2K
VR601
4. 7K
C601
470/35
C602
100/16
C604
47/35
IC601
R605
10K

J POWER SUPPLY UNIT (VWR1400)



Unit	Resistor	Ω/W (under 1/4W for no direction W
	Capacitor	μF/V (under 50V for no direction V

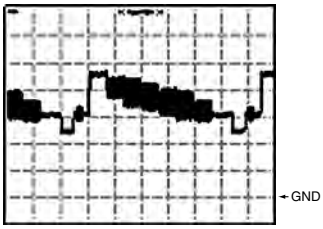

CN202
5 PO_ON/OFF
4 EV+12.1V
3 GND
2 EV+5.0V(T)
1 GND
A 1/4 CN303
P201
1.25A
P401
1.6A
(L401)
(L402)
C405
0.1
R401
100K
Q401
Q402
R406
100K
C401
470/35
C402
470/35
C403
47/35
C404
47/35
D402
(R402)
(R403)
(R405)
(R404)
CN201
1 SW+12.1V(M)
2 GND
3 SW+5V(M)
4 GND
5 SW+12.1V(J)
6 GND
7 SW+3.3V(M)
8 SW+3.3V(M)
9 GND
10 SW+1.5V(M)
11 SW+1.5V(M)
12 GND
13 EV+5.0V(M)
B 3/4 CN2401
(L202)
P202
1A
P402
1.6A
(P203)
Q201
R211
0
L201
R202
680
PC101
R204
10K
VR201
4.7K
(R201)
R203
1K
C203
0.1
C201
470/35
C202
470/35
IC201
R205
15K
R206
620
C204
47/35
R207
0
C205
4700pF
IC202
R208
470
R209
10K
R210
10K
C206
47/35
(R506)
L501
(D503)
D502
P501
2.5A
Q501
R501
1.2K
(R507)
R502
0
C503
0.01
R504
47
R503
4.7
C504
47/35
R509
270
R505
150
VR501
4.7K
IC501
(R508)
C501
470/35
C502
47/35
P204
1.6A
(L204)
(L403)
(L203)
CN204
1 SW+12.1V(M)
2 GND
3 GND
4 SW+5V(M)
to HDD
(C606)
(R606)
L601
D603
D604
(P601)
Q601
R601
1.8K
R602
0
C603
470pF
R604
2.2K
R603
1K
VR601
4.7K
C604
47/35
IC601
R605
10K
C601
470/35
C602
100/16
C
D
E
F
J

3.17 WAVE FORMS

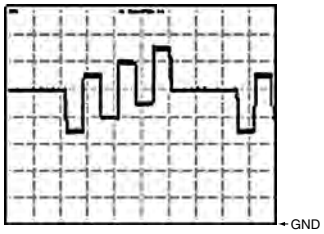
Note : The encircled numbers denote measuring point in the schematic diagram.

A TUJB ASSY

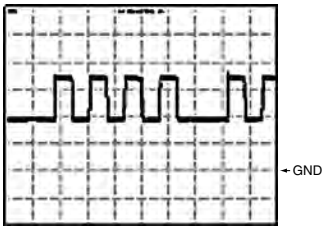
1 **IC100-pin18 (TU-VIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



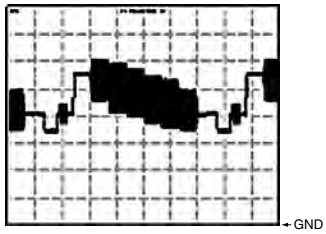
6 **C2034+side (CbOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



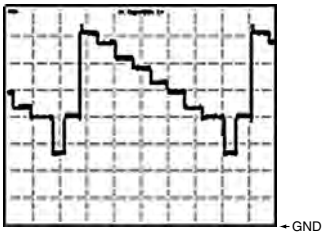
11 **CN4002-pin23 (Cb_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



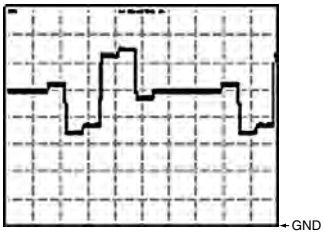
16 **IC100-pin14 (2VIN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



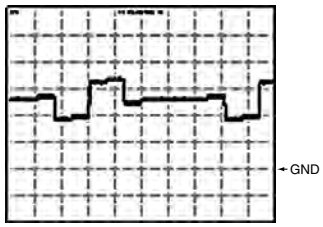
2 **C2036+side (Y1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



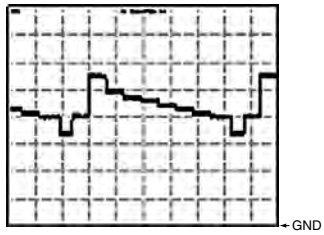
7 **C2033+side (CrOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



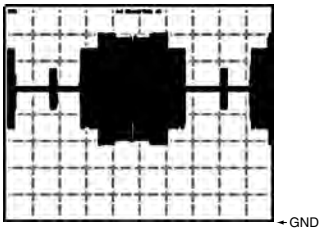
12 **CN4002-pin25 (Cr_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



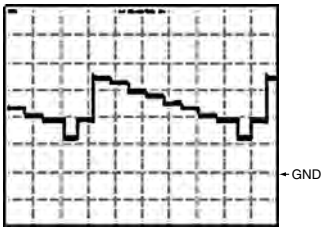
17 **IC100-pin7 (Y2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



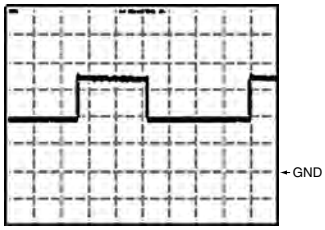
3 **IC100-pin34 (C1OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



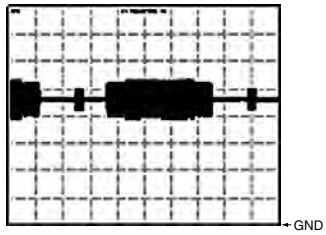
8 **CN4002-pin19 (Y_OUT MtoT)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



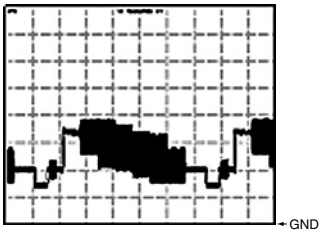
13 **CN4002-pin21 (Y/G_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



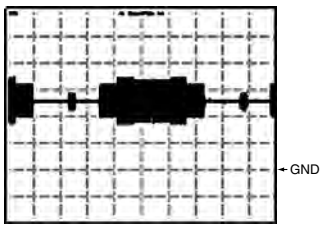
18 **IC100-pin9 (C2IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



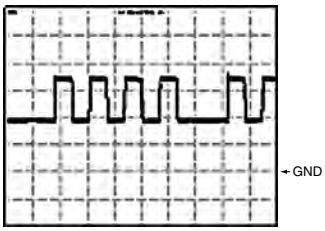
4 **C2037+side (V1OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



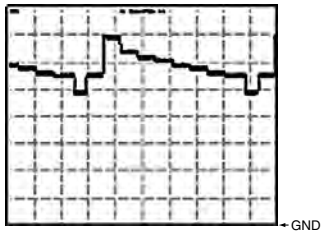
9 **CN4002-pin17 (C_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



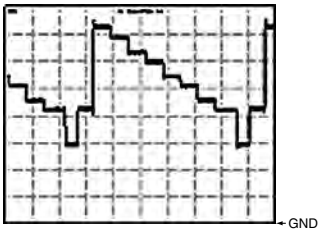
14 **CN4002-pin23 (Cb/B_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



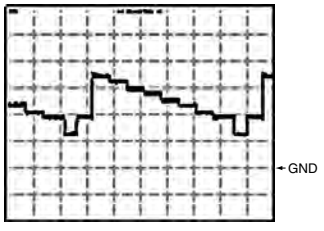
19 **CN4002-pin28 (Y_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



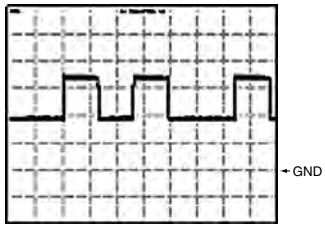
5 **C2035+side (YOUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



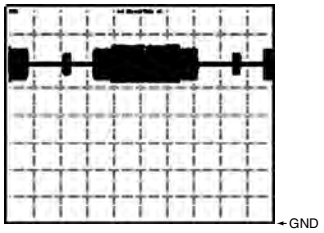
10 **CN4002-pin21 (Yp_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



15 **CN4002-pin25 (Cr/R_OUT MtoT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



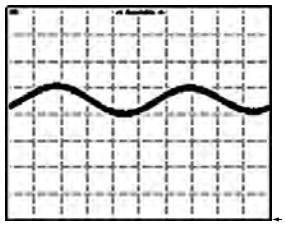
20 **CN4002-pin30 (C_IN TtoM)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



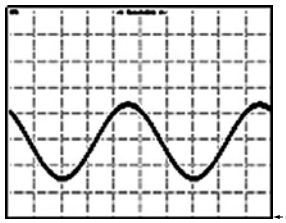
A TUJB ASSY

Measurement Condition :

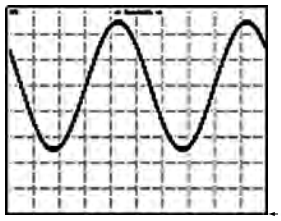
21 **IC100-pin87 (TU-LIN)**
(Function : Tuner 9ch)
V:500mV/div. H:10μsec/div.



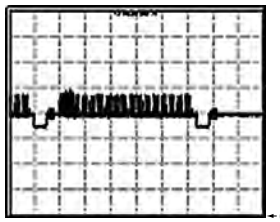
22 **C2038+side (L_OUT)**
Function : DVD play)
V:500mV/div. H:10μsec/div.



23 **CN4002-pin32 (L_IN)**
(Function : LINE2 IN)
V:500mV/div. H:10μsec/div.



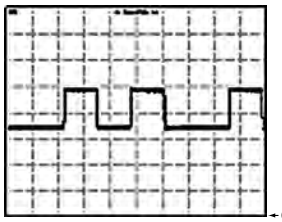
24 **IC101-pin81 (TEXTV)**
(Function : RF IN)
V:1V/div. H:10μsec/div.



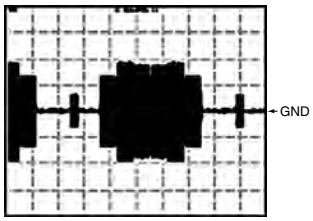
B SCRB ASSY

Measurement Condition :

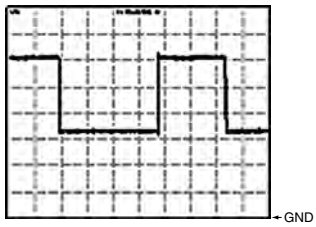
1 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



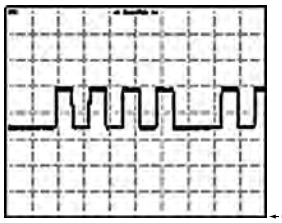
5 **JA801-pin15 (R/C IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



9 **CN1-pin24 (AV1_G_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.

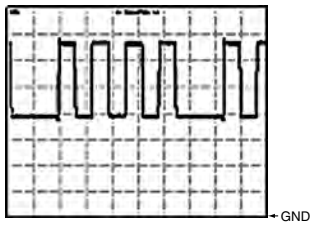


2 **JA801-pin7 (BIN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.

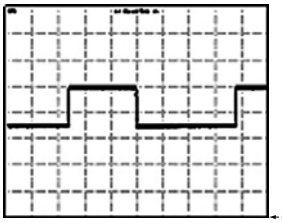


6 **CN1-pin29 (AV1_V/Y_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.

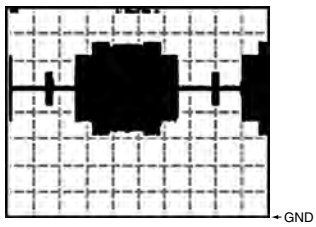
10 **CN1-pin12 (AV1_B_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



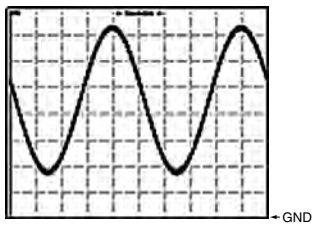
3 **JA801-pin11 (G IN)**
(Function : LINE1 IN)
V:500mV/div. H:10μsec/div.



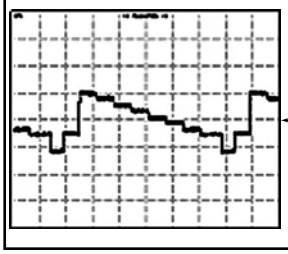
7 **CN1-pin26 (AV1_R/C_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



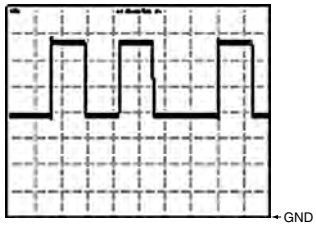
11 **CN1-pin4 (AV1_L_OUT)**
(Function : DVD play)
V:500mV/div. H:10μsec/div.



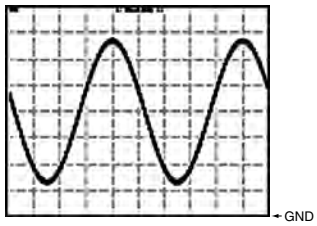
4 **JA801-pin20 (AV2_V/Y IN))**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.



8 **CN1-pin26 (AV1_R/C_OUT)**
(Function : DVD play)
V:1V/div. H:10μsec/div.



12 **JA801-pin6 (AV2_L_IN)**
(Function : LINE1 IN)
V:1V/div. H:10μsec/div.

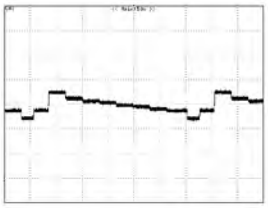


F MAIN ASSY

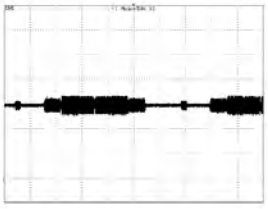
Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

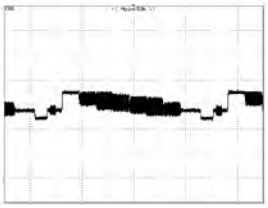
1 CN2301 Pin8 (Y_IN)
V: 1V/div. H: 10us/div.



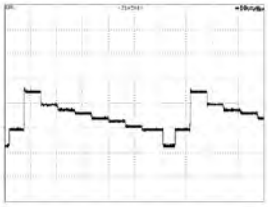
2 CN2301 Pin6 (C_IN)
V: 1V/div. H: 10us/div.



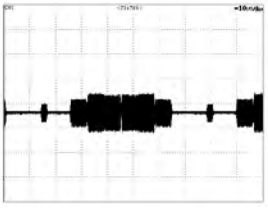
3 CN2301 Pin_8 (CVBS_IN)
V: 1V/div. H: 10us/div.



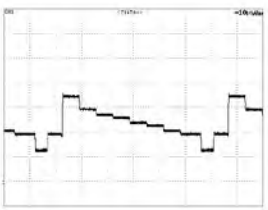
4 CN2301 Pin17 (Y_OUT)
V: 0.5V/div. H: 10us/div.



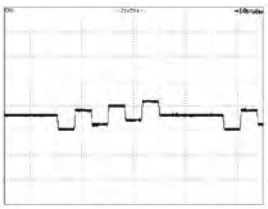
5 CN2301 Pin19 (C_OUT)
V: 0.5V/div. H: 10us/div.



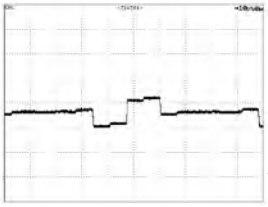
6 CN2301 Pin15 (YP_OUT)
V: 0.5V/div. H: 10us/div.



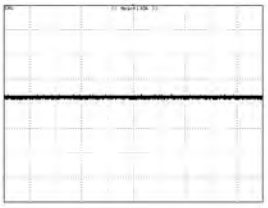
7 CN2301 Pin13 (CB_OUT)
V: 0.5V/div. H: 10us/div.



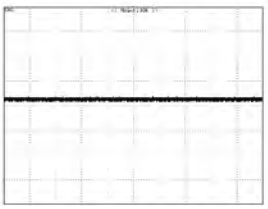
8 CN2301 Pin11 (CR_OUT)
V: 0.5V/div. H: 10us/div.



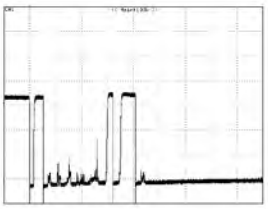
9 IC501 Pin22 (XDMUTE1)
V: 1V/div. H: 20us/div.



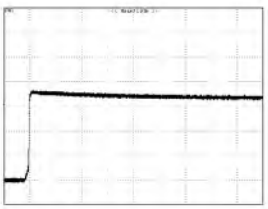
10 IC501 Pin23 (XDMUTE2)
V: 1V/div. H: 20us/div.



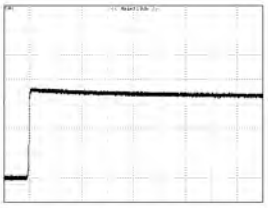
11 CN601 Pin3 (CLOSE)
open → close
V: 1V/div. H: 20us/div.



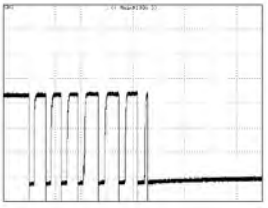
12 CN601 Pin3 (CLOSE)
close → open
V: 1V/div. H: 20us/div.



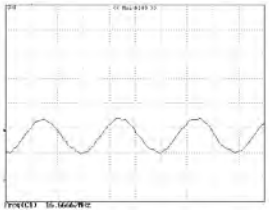
13 CN601 Pin5 (CLOSE)
open → close
V: 1V/div. H: 20us/div.



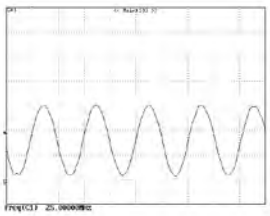
14 CN601 Pin5 (CLOSE)
close → open
V: 1V/div. H: 20us/div.



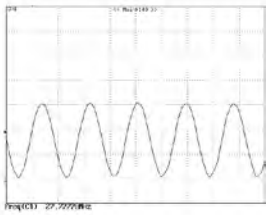
15 X201 (16.93MHz)
V: 1V/div. H: 20ns/div.



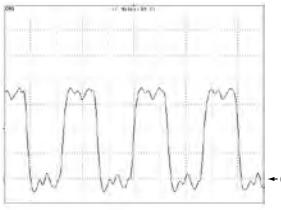
16 X1001 (24.576MHz)
V: 1V/div. H: 20ns/div.



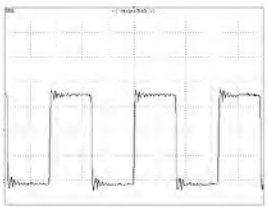
17 X1002 (27MHz)
V: 1V/div. H: 20ns/div.



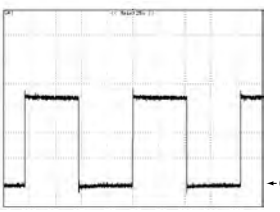
18 IC3101 Pin11 (ADCCLKO)
V: 1V/div. H: 20ns/div.



19 IC3101 Pin12 (AD_BCK)
V: 1V/div. H: 100ns/div.

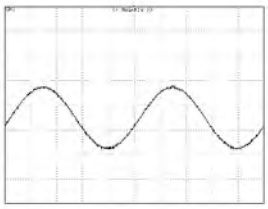


20 IC3101 Pin10 (AD_LRCK)
V: 1V/div. H: 5us/div.

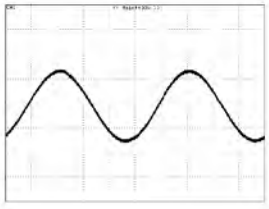


F MAIN ASSY

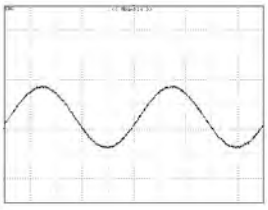
21 **CN2301 Pin4 (LCH IN)**
V: 1V/div. H: 200us/div.



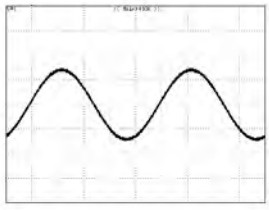
26 **CN2301 Pin21 (LCH OUT)**
V: 2V/div. H: 200us/div.



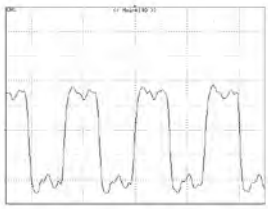
22 **CN2301 Pin2 (RCH IN)**
V: 1V/div. H: 200us/div.



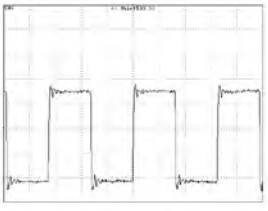
27 **CN2301 Pin23 (RCH OUT)**
V: 2V/div. H: 200us/div.



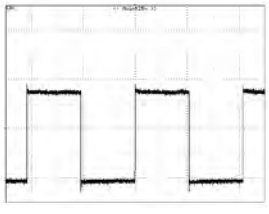
23 **IC3201 Pin16 (DACCLKO)**
V: 1V/div. H: 20ns/div.



24 **IC3201 Pin1 (DACBCKO)**
V: 1V/div. H: 100ns/div.



25 **IC3201 Pin3 (DACLRCKO)**
V: 0.5V/div. H: 5us/div.



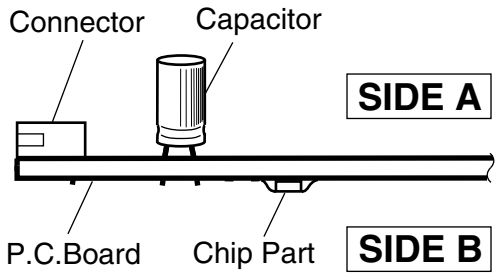
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

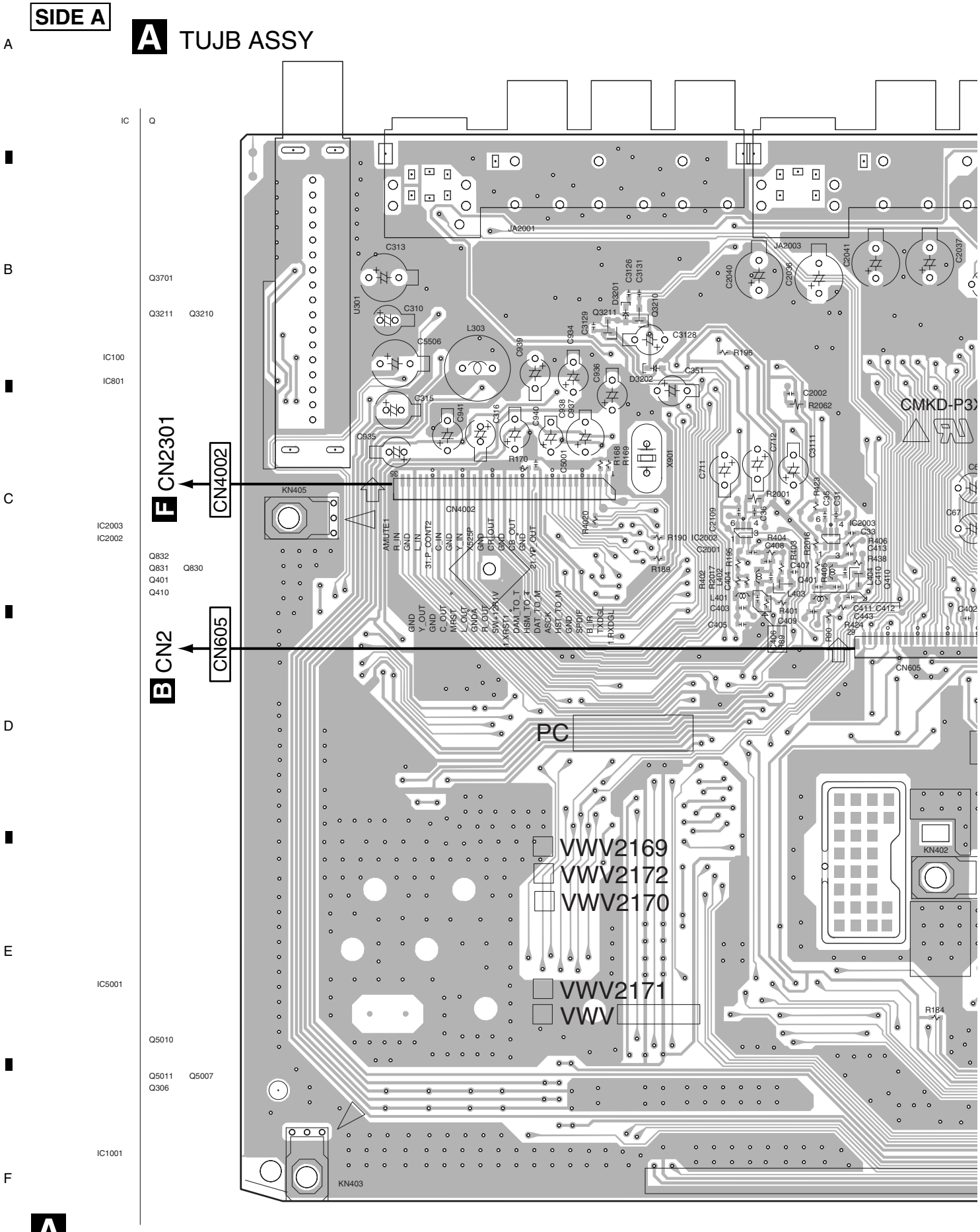
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.

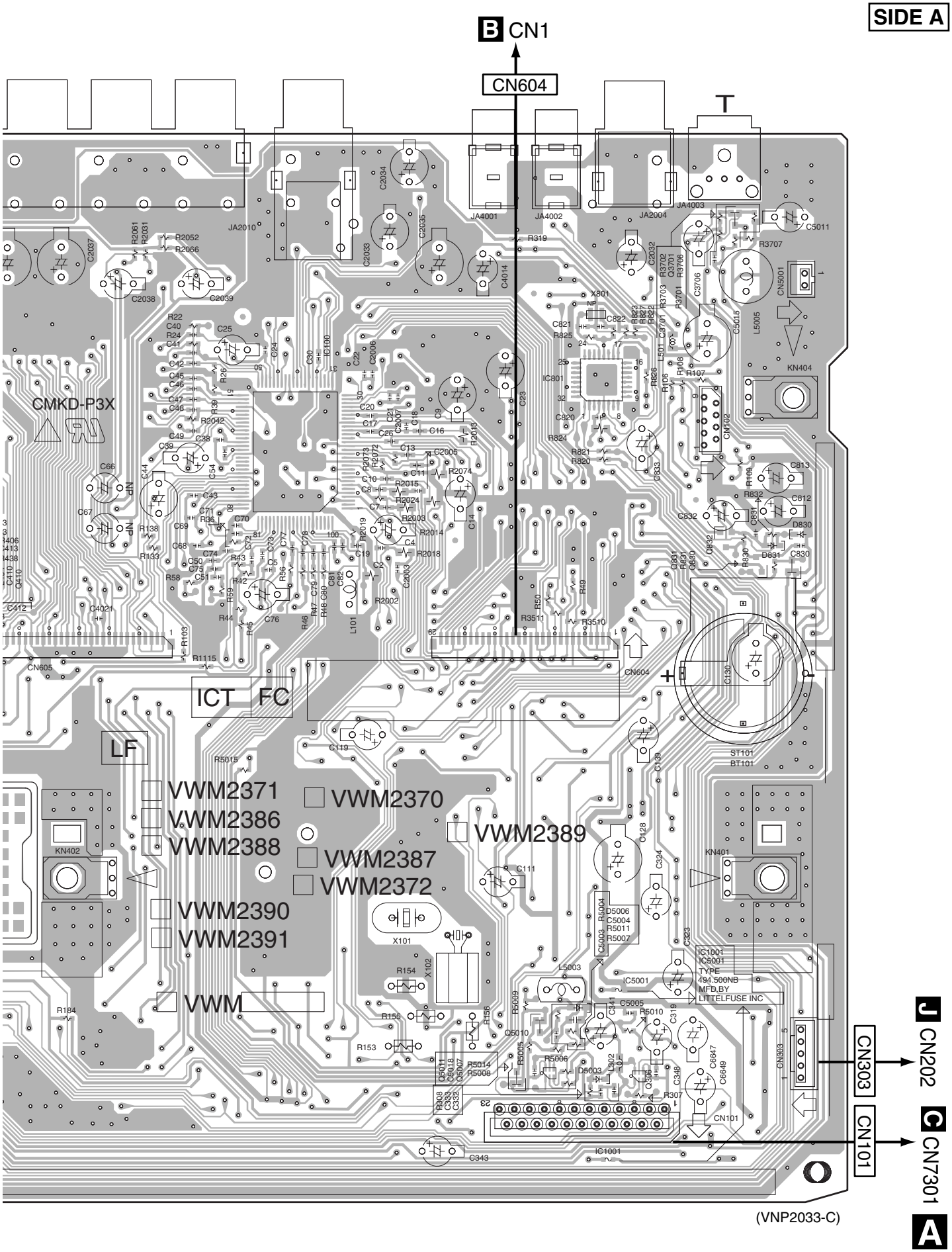


4.1 TUJB ASSY

SIDE A



SIDE A


B CN1
CN604
T
JA4001
JA4002
JA2004
JA4003
JA2010
CMKD-P3X
ICT
FC
LF
VWM2371
VWM2386
VWM2388
VWM2370
VWM2389
VWM2387
VWM2372
VWM2390
VWM2391
VWM
CN605
CN604
KN402
KN401
KN404
CN102
CN5001
L5005
C5015
C5011
R3707
X801
IC801
IC1001
IC1001
IC5001
TYPE
494.500NB
MFD.BY
LITTELFUSE INC
X101
X102
L5003
ST101
BT101
CN303
CN101
J CN202
C CN7301
A
(VNP2033-C)

SIDE B

A TUJB ASSY

IC

Q

Q3002

Q5006 Q3004 Q3003
Q4003 Q4002 Q3001 Q6001 Q5009

Q2001

Q310

Q4 Q5008

Q812 Q108

IC701

Q106
Q107
Q811

IC901

Q810
Q2 Q409
Q3011

Q906
Q3010

Q105 Q101

IC101

Q904

IC4001

Q903

Q103

Q104
Q303 Q4001

Q307

Q102
Q313
Q302

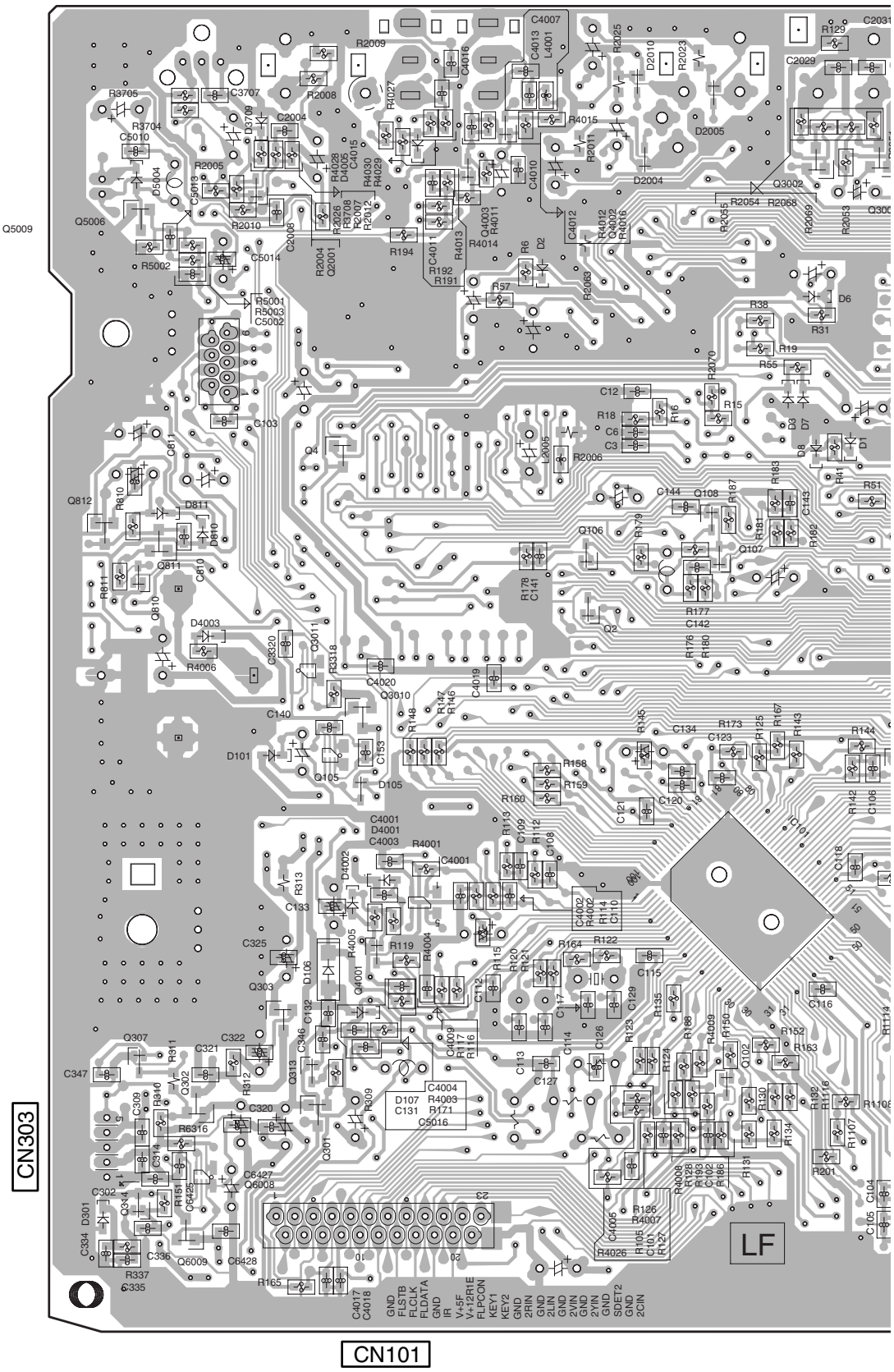
Q301

Q6008

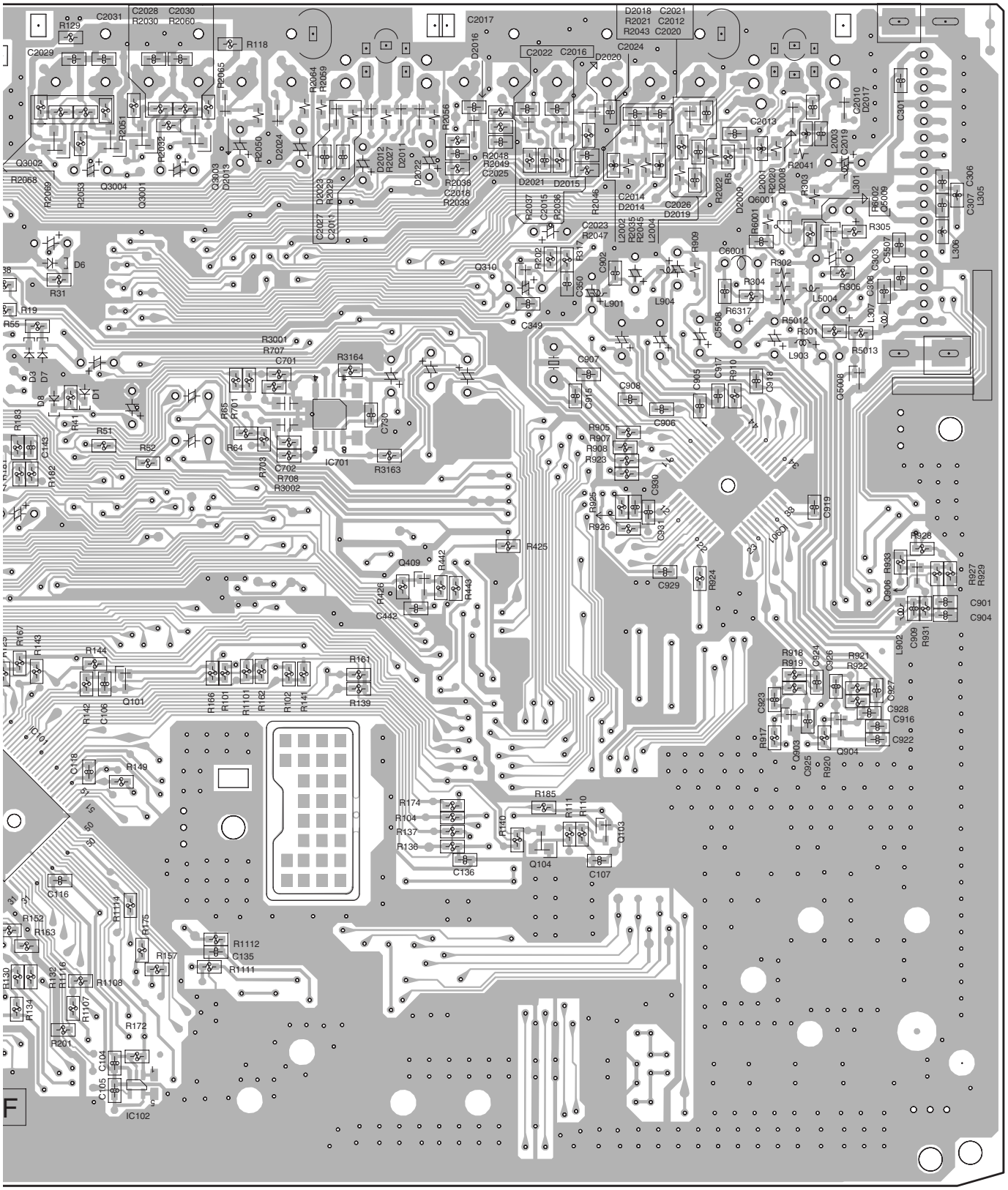
Q314

IC102

Q6009



SIDE B

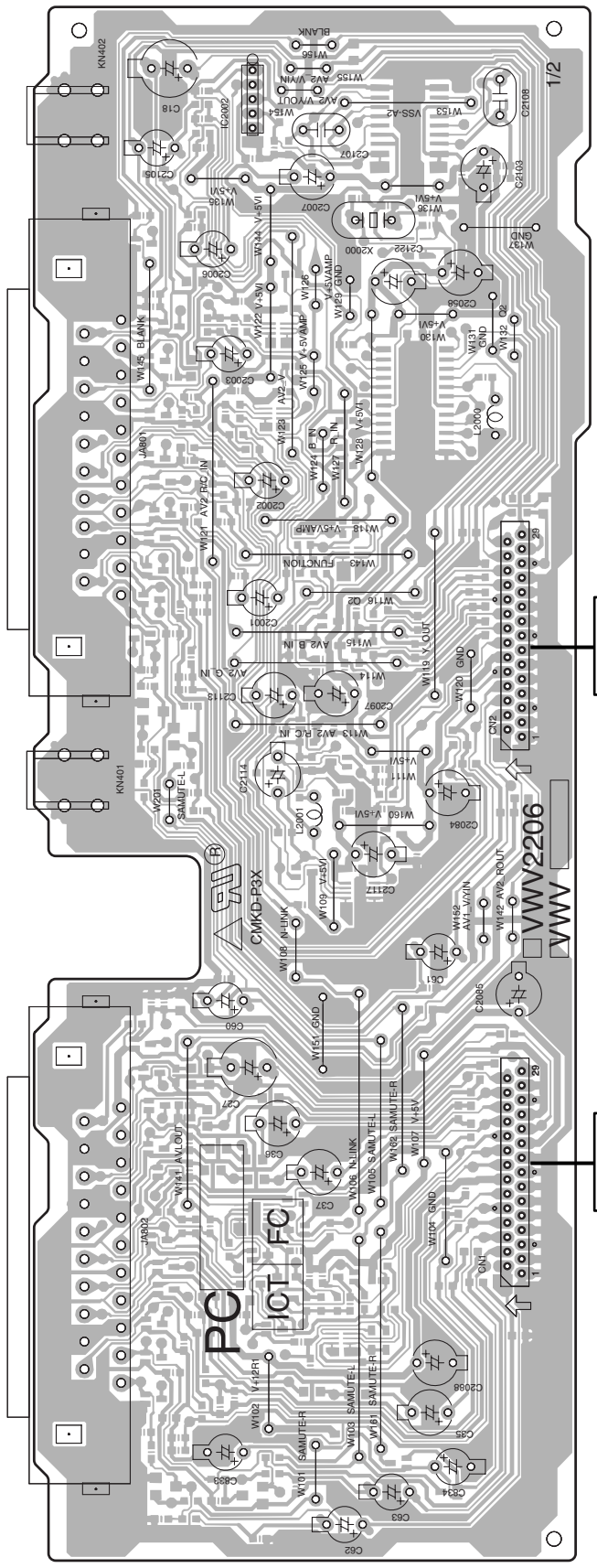


(VNP2033-C)

4.2 SCRB ASSY

SIDE A

B SCRB ASSY



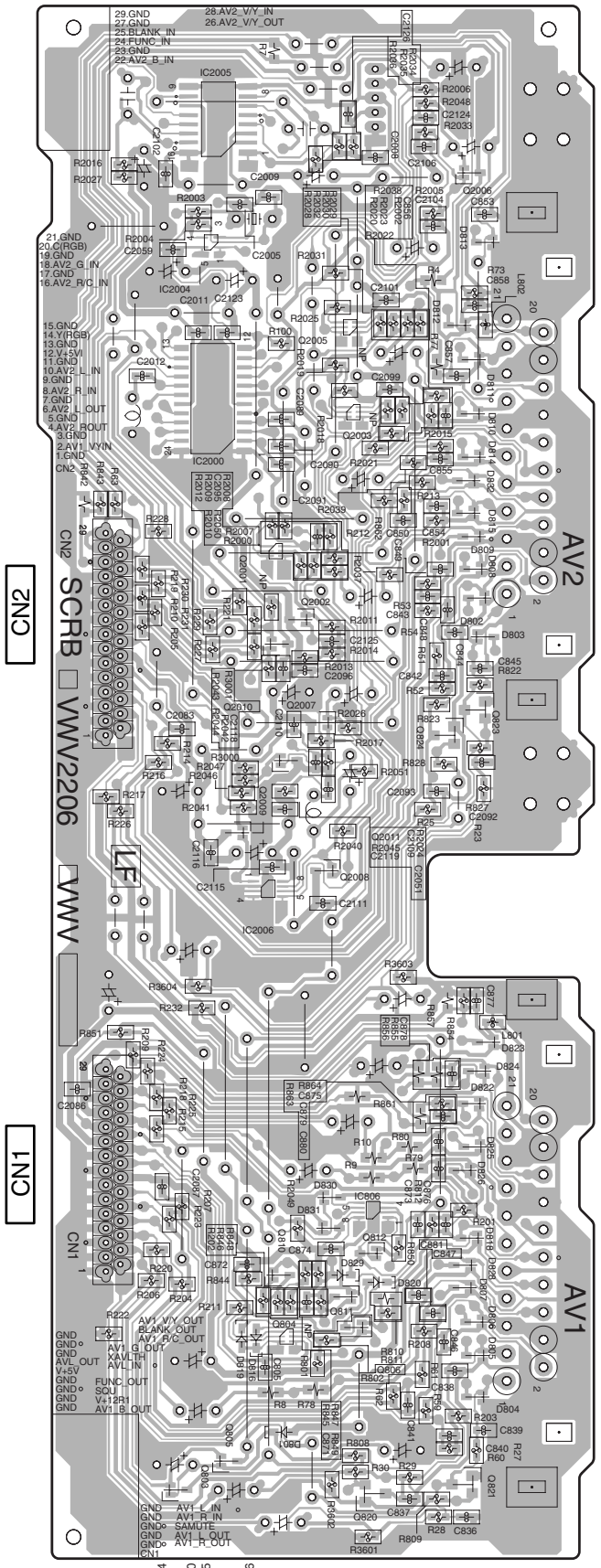
SIDE A

B

SIDE B

SIDE B

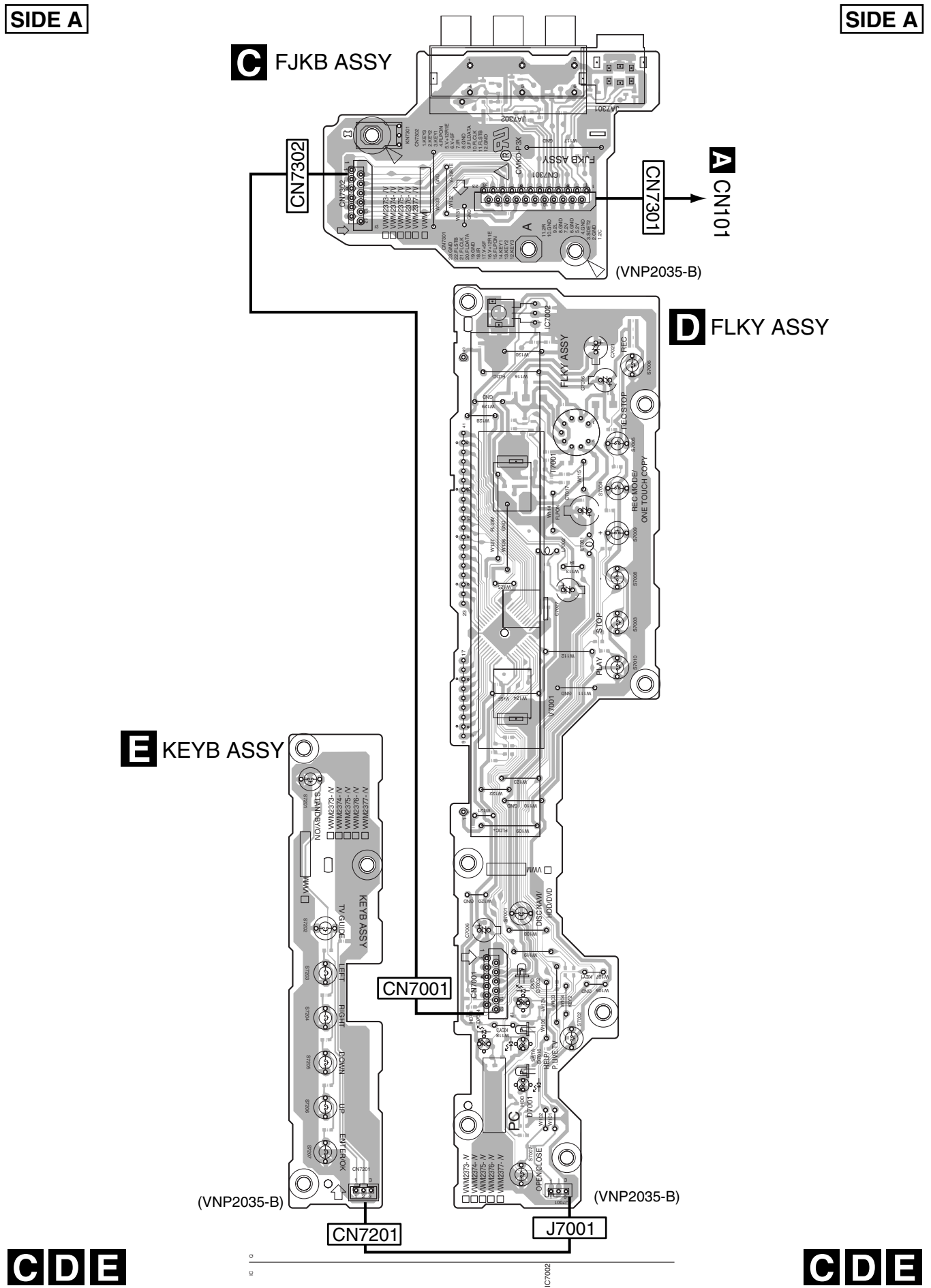
B SCRB ASSY



(VNP2034-B)

DVR-640H-AV

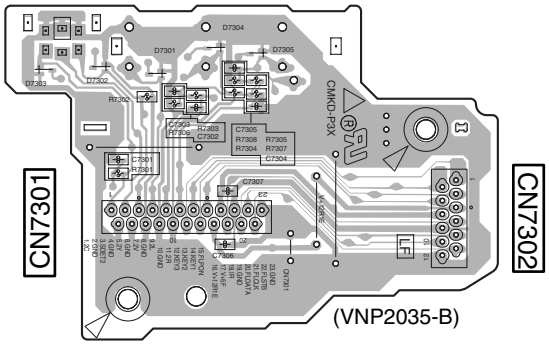
4.3 FJKB, FLKY and KEYB ASSYS



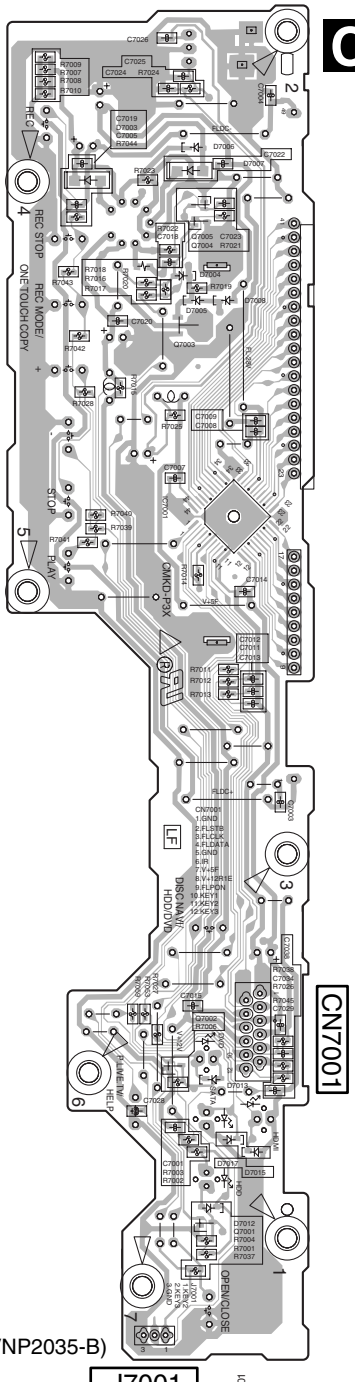
SIDE B

SIDE B

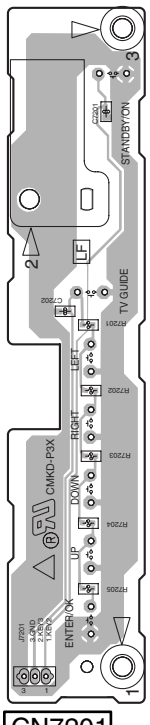
B FJKB ASSY



C FLKY ASSY



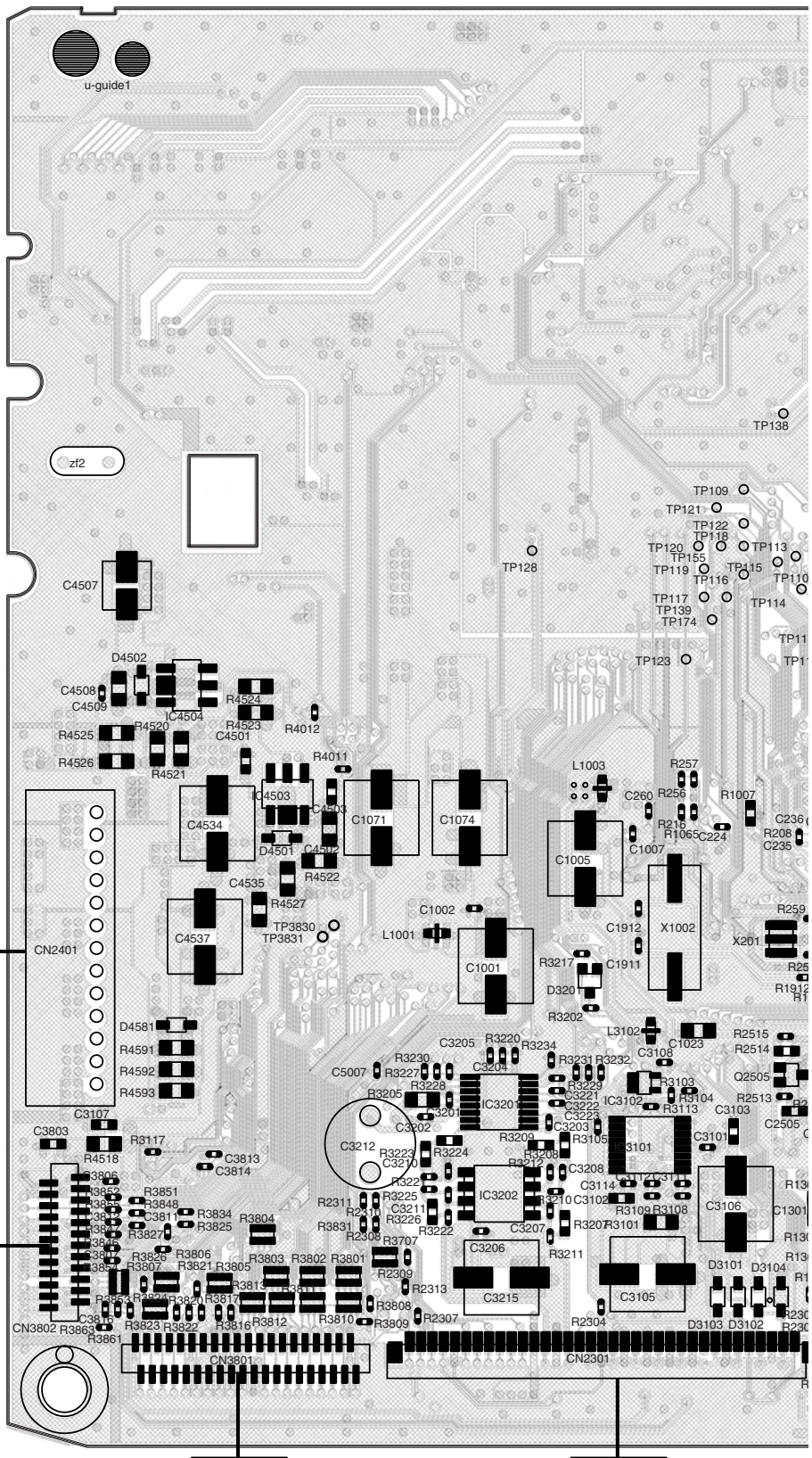
D KEYB ASSY



4.4 MAIN ASSY

SIDE A

F MAIN ASSY



J CN201

CN2401

G CN101

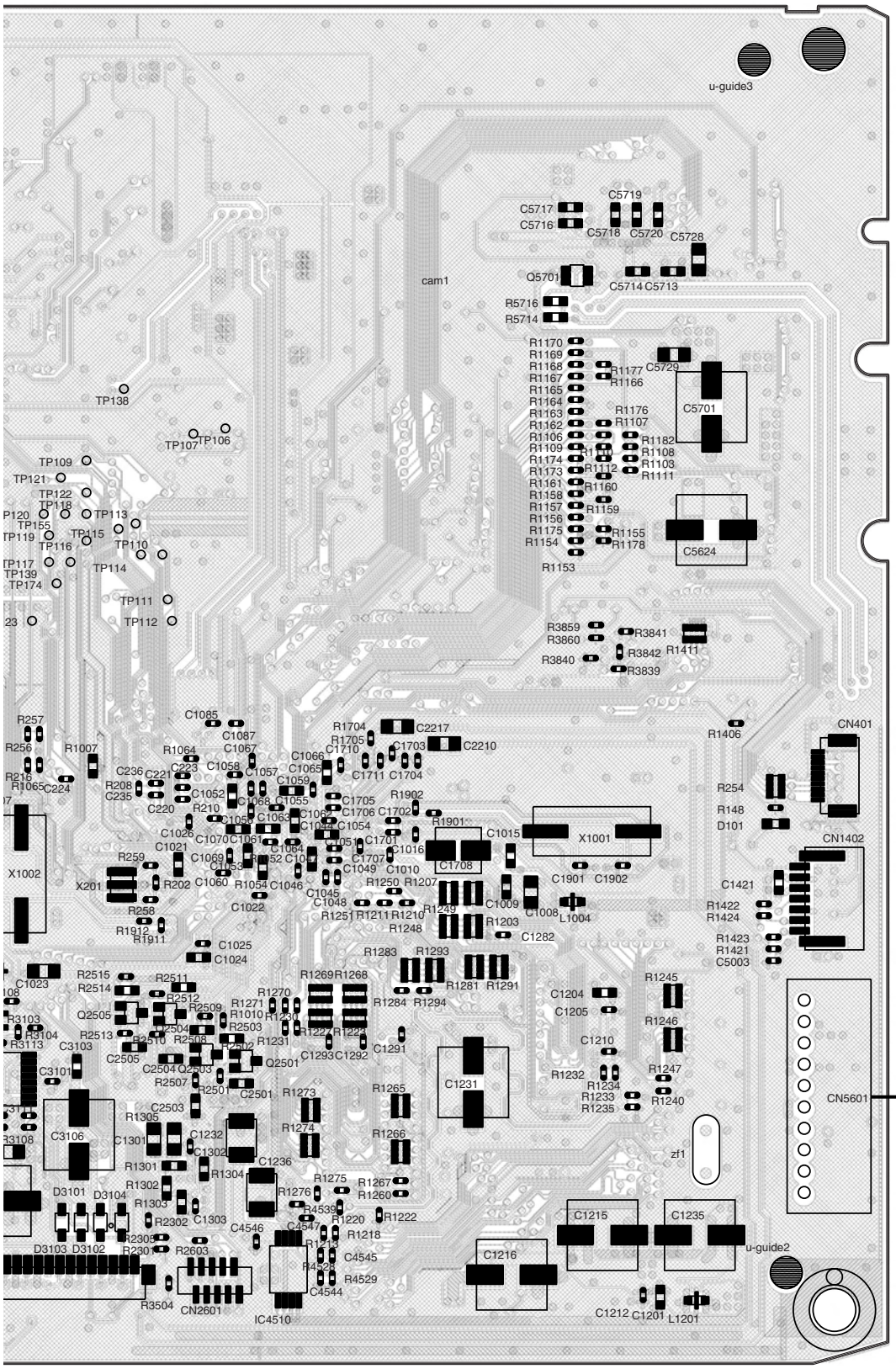
CN3802

CN3801 → I CN11

CN2301 → A CN4002

F

SIDE A



(VNP2038-A)

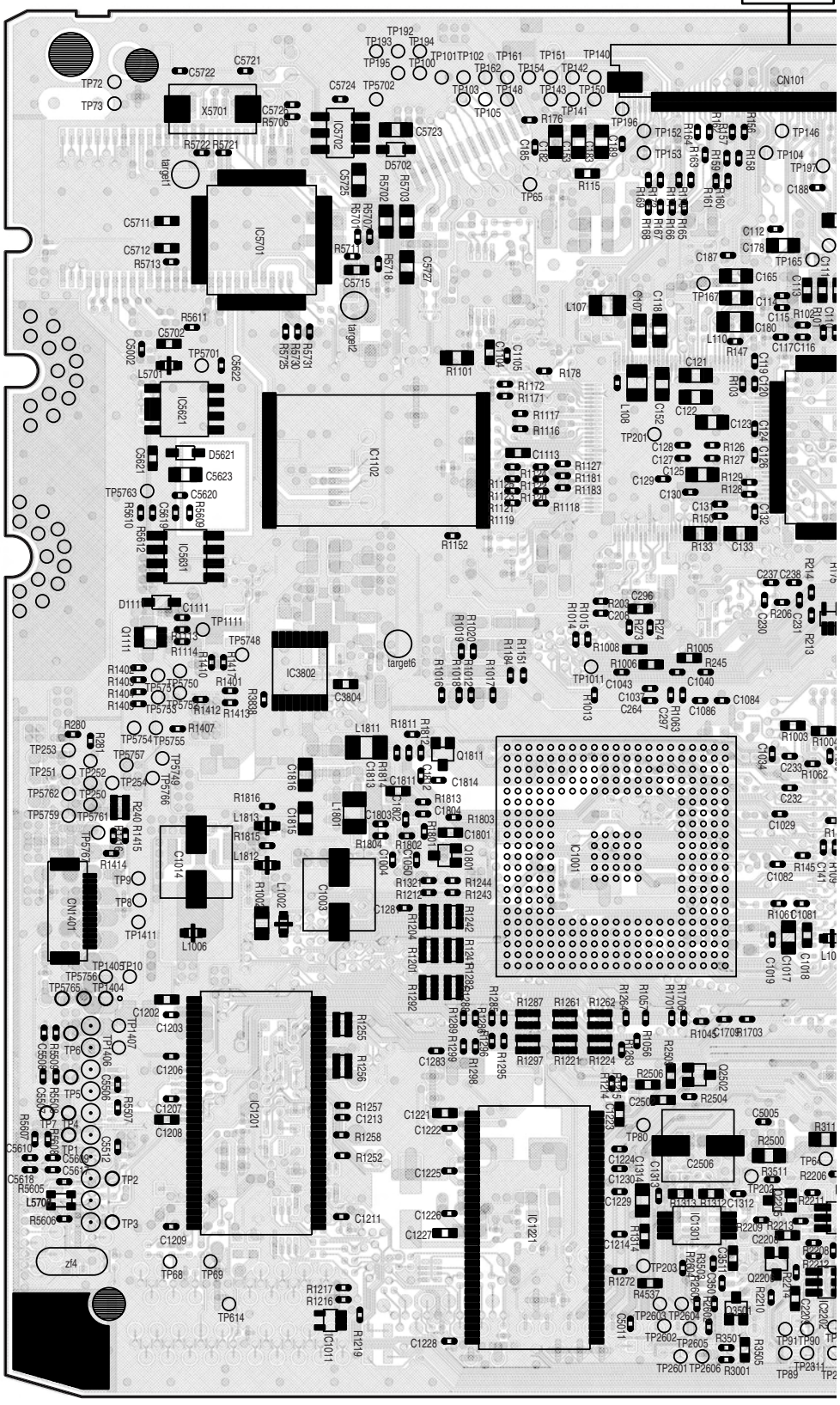
SIDE B

F MAIN ASSY

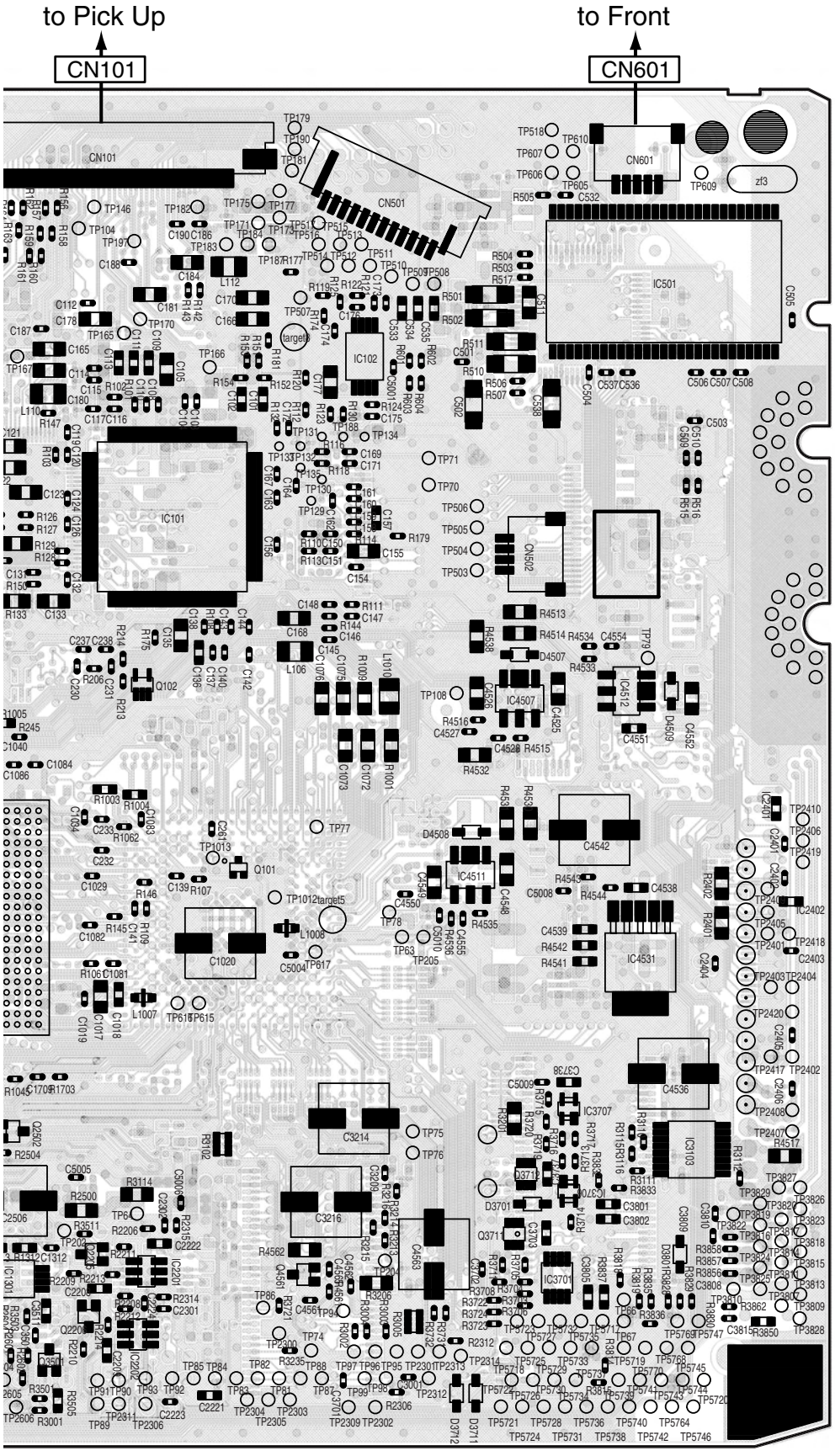
to Pick U

CN101

Q	IC
	IC5702
	IC501
	IC5701
	IC102
	IC5621
	IC101
	IC1102
	IC5631
	IC4512
Q1111	IC4507
	IC3802
Q1811	
	IC4511
Q1801	IC1001
	IC4531
Q2502	
	IC3103
Q3712	IC1201
Q3711	
Q4561	IC2201
	IC1221 IC3701
	IC1301
Q3501	IC2202



SIDE B


to Pick Up
to Front
CN101
CN601
CN501
CN502
IC101
IC102
IC501
IC4507
IC4511
IC4512
IC4531
IC3707
IC3701
IC3103
IC2401
IC2402
IC2201
IC1301
IC1302
Q102
Q101
Q1002
Q2200
Q2502
Q3711
L106
L1008
L1007
L112
L110
C1020
C3214
C3216
C4542
C4536
C4538
C4539
C4541
C4563
C4561
C4562
C4566
C4567
C4568
C4569
C4570
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C4575
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C4578
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C4590
C4591
C4592
C4593
C4594
C4595
C4596
C4597
C4598
C4599
C4600
C4601
C4602
C4603
C4604
C4605

4.5 DVJB ASSY (DVR-640H-AV Only)

SIDE A **SIDE A**

A

B

C

D

E

F

IC Q

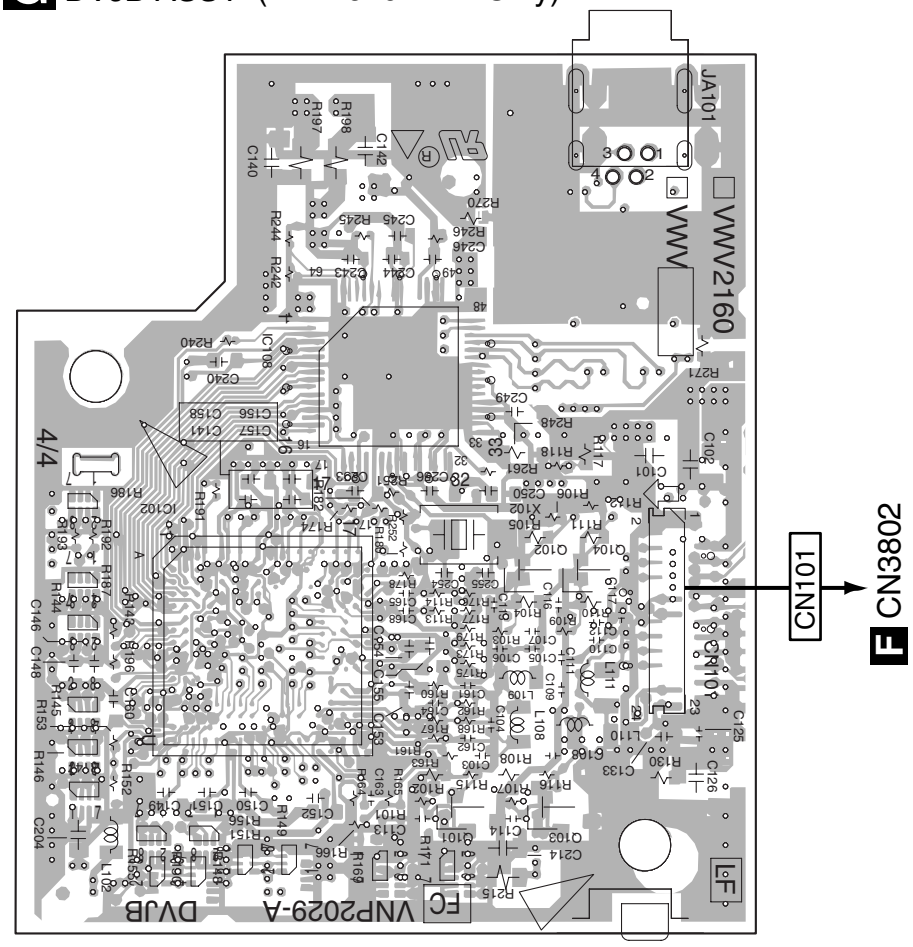
IC108

IC102

Q102 Q104

Q101 Q103

G DVJB ASSY (DVR-640H-AV Only)



(VNP2029-A)

G **G**

SIDE B

SIDE B

A

B

C

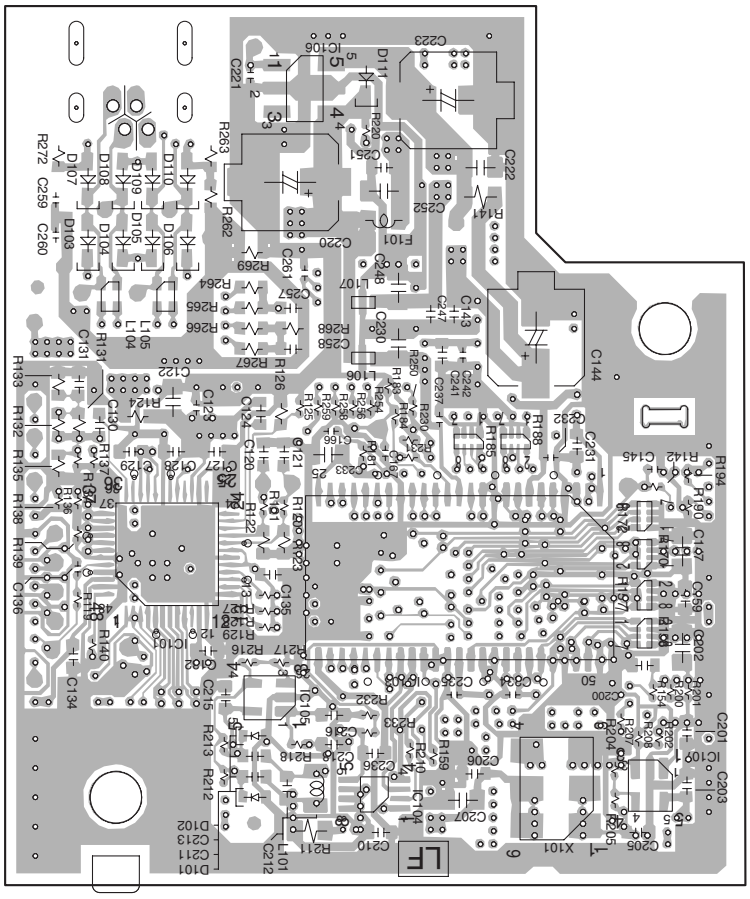
D

E

F

G DVJB ASSY (DVR-640H-AV Only)

IC	Q
IC106	
IC101	
IC103	
IC105	
IC107	
IC104	



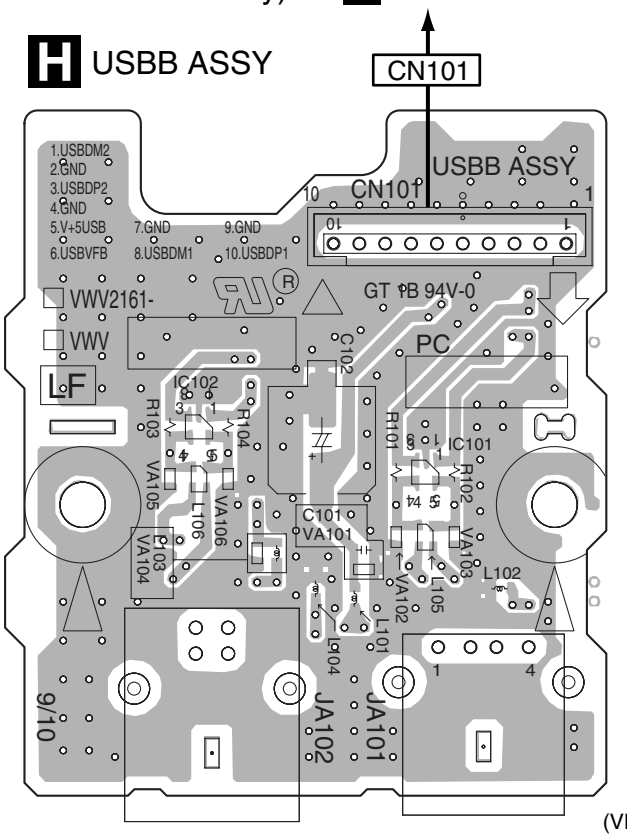
(VNP2029-A)

4.6 USBB ASSY (DVR-640H-AV Only)

SIDE A **SIDE A**

(DVR-640H-AV Only) F CN5601

H USBB ASSY



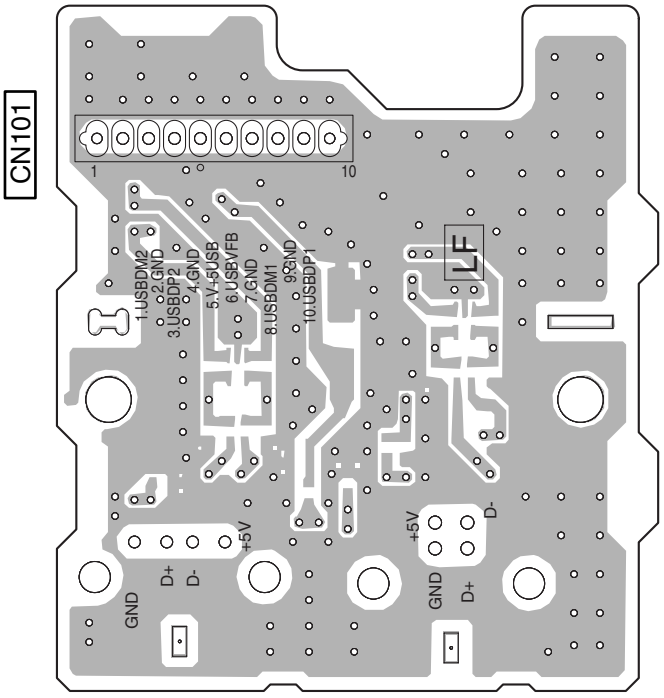
(VNP2030-A)

SIDE B

SIDE B

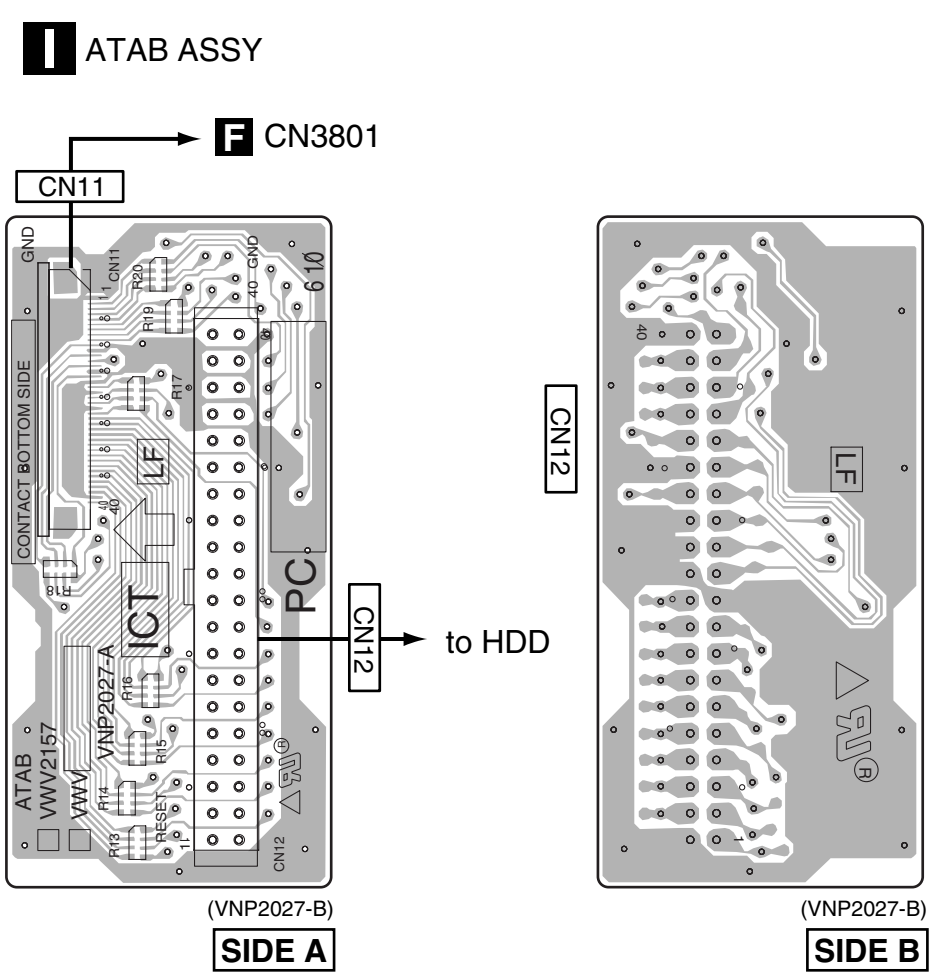
A B C D E F

H USBB ASSY (DVR-640H-AV Only)



(VNP2030-A)

4.7 ATAB ASSY


SIDE A
ATAB ASSY
SIDE B
F CN3801
CN11
GND
CONTACT BOTTOM SIDE
CN11
R20
R19
R17
LF
ICT
PC
CN12
to HDD
ATAB
VWV2157
VNP2027-A
R16
R15
R14
R13
RESET
CN12
(VNP2027-B)
SIDE A
CN12
LF
(VNP2027-B)
SIDE B

A

B

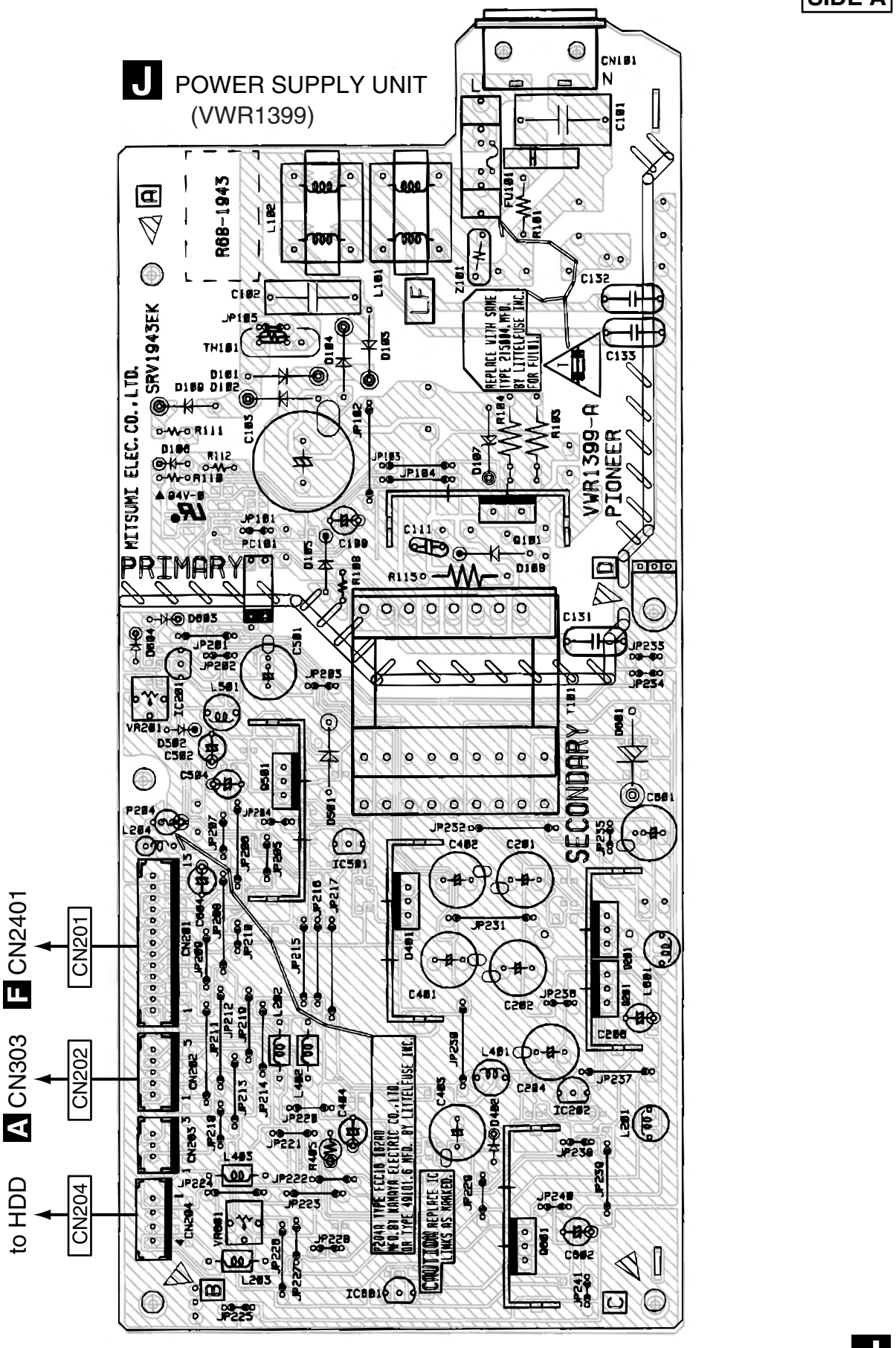
C

D

E

F

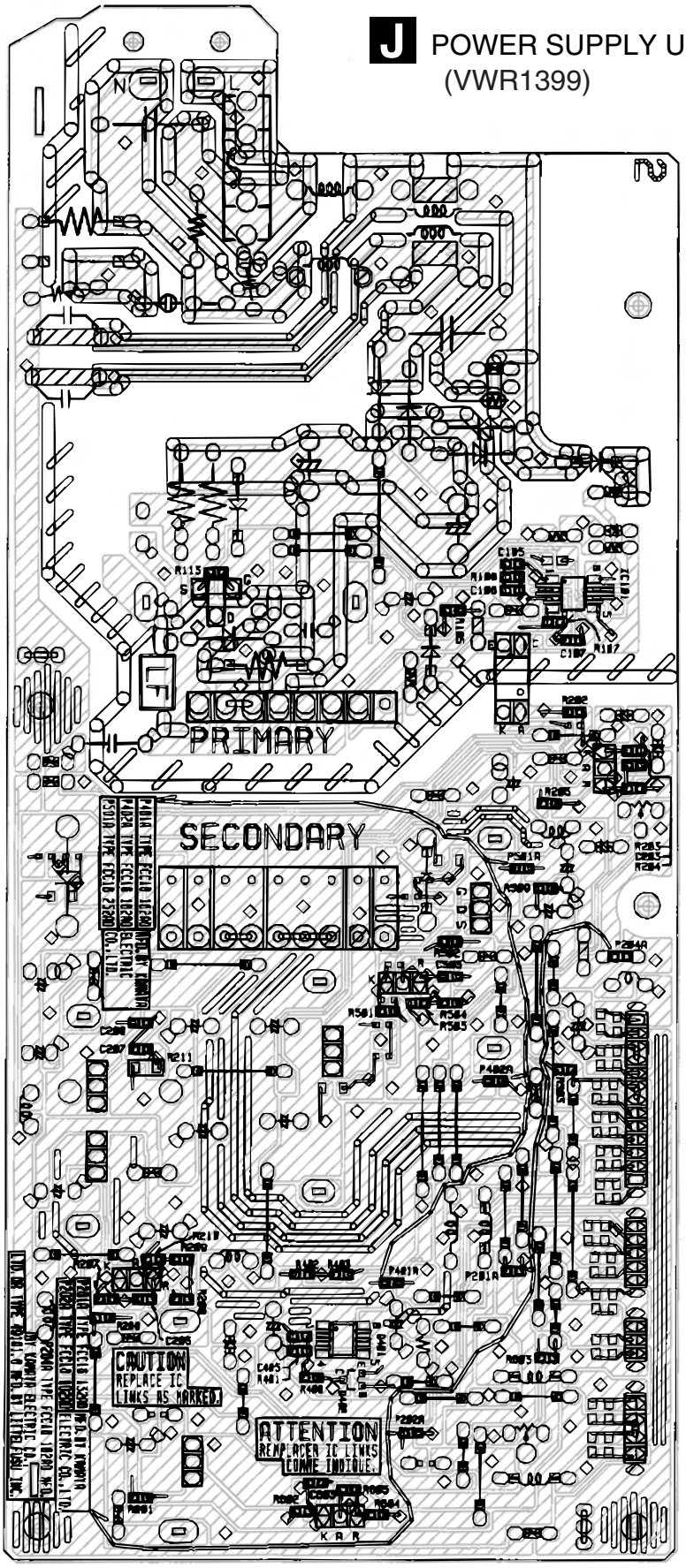
4.8 POWER SUPPLY UNIT



SIDE B

SIDE B

J POWER SUPPLY UNIT (VWR1399)



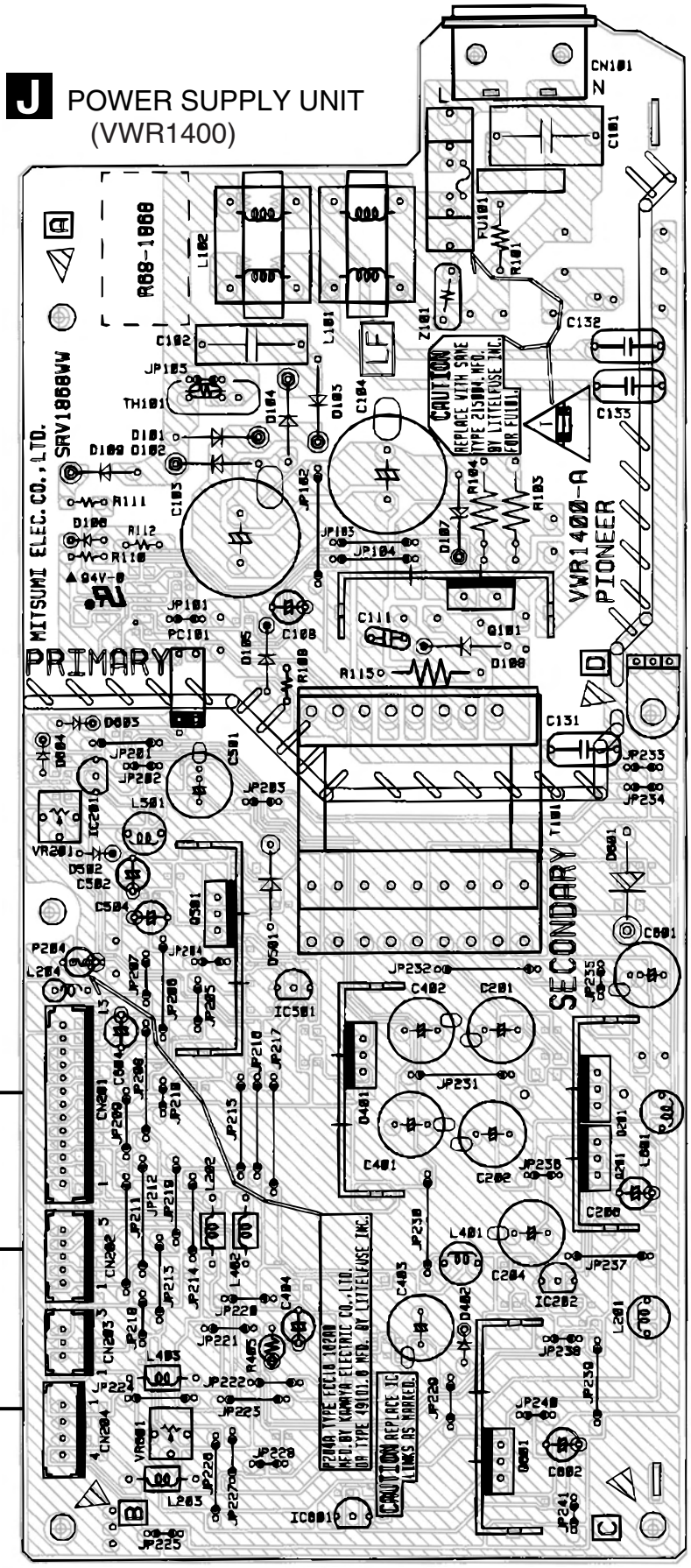
J

J

SIDE A

SIDE A

J POWER SUPPLY UNIT
(VWR1400)



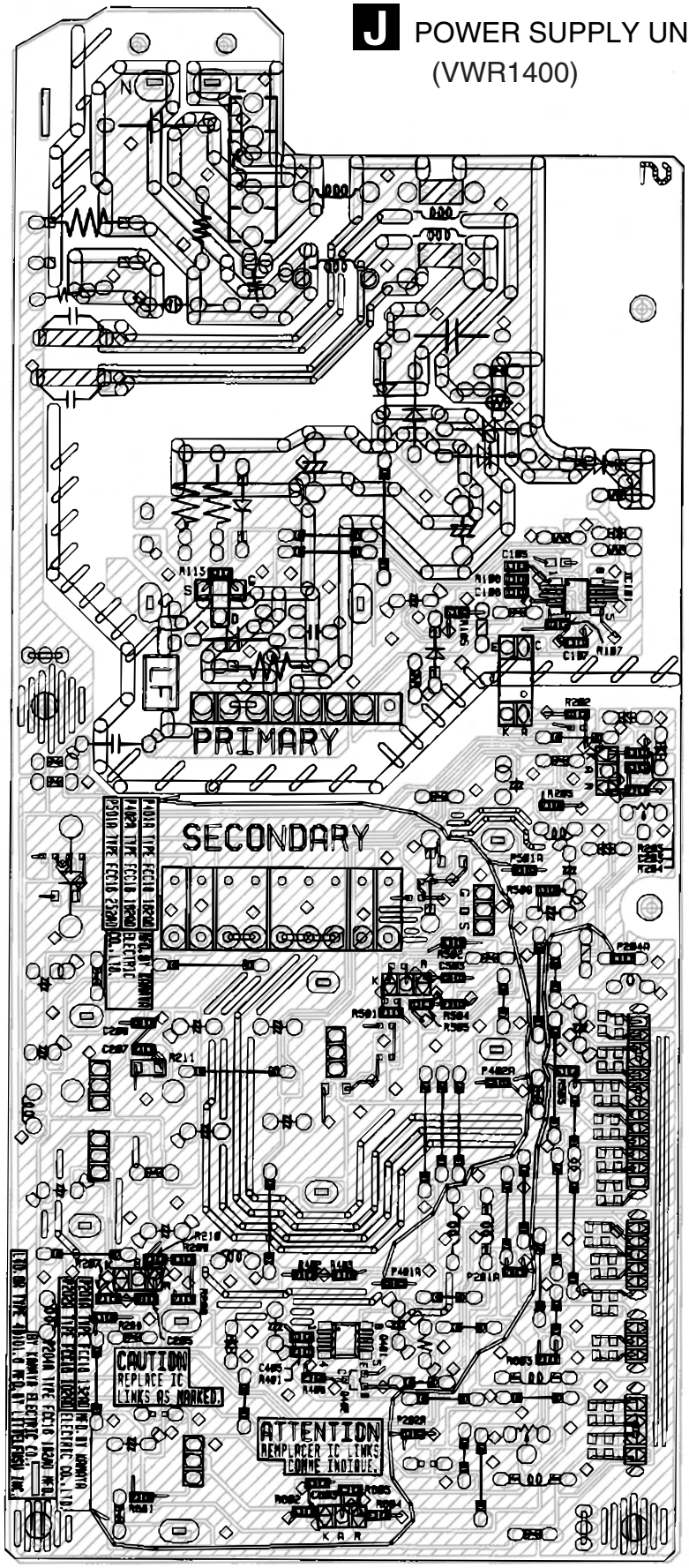
74

DVR-640H-AV

SIDE B

SIDE B

J POWER SUPPLY UNIT
(VWR1400)



J

J

5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	→ *56 x 10[1]* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*473*	*RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		*RN2H R 5 0 K*
1 Ω	→ *1R0*		*RS1P 1 R 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	→ *562 x 10[1]* →	*5621*	*RN1/4PC 5 6 2 1 F*

LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	DVR-640H-AV	DVR-540H-S
NSP	1..TUJB ASSY	VWM2371	VWM2370
NSP	2..TUJB AI	VWV2169	VWV2169
	3..TUJB ASSY (for Service)	VXX3109	VXX3108
	1..SCRB ASSY	VWV2206	VWV2206
NSP	1..FLKB ASSY	VWM2377	VWM2377
NSP	2..FLKB AI	VWG2566	VWG2566
	3..FLKY ASSY (for Service)	VXX3111	VXX3111
	3..KEYB ASSY (for Service)	VXX3112	VXX3112
	3..FJKB ASSY (for Service)	VXX3113	VXX3113
	1..MAIN ASSY (for Service)	VXX3157	VXX3159
	1..DVJB ASSY	VWV2160	Not used
	1..USBB ASSY	VWV2161	Not used
	1..ATAB ASSY (for Service)	VXX3140	VXX3140
⚠	1..POWER SUPPLY UNIT	VWR1339	VWR1339

A TUJB ASSY

VXX3109 and VXX3108 are constructed the same except for the following :

Mark	Symbol and Description	VXX3109	VXX3108
	R153	Not used	RD1/4PU393J
	R154	RD1/4PU153J	RD1/4PU682J

A TUJB ASSY (DVR-640H-AV)

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC701		BA4560RF
	IC4001		BD4846G
	IC102		BU4220G
⚠	IC1001, IC5001		CEK1278
	IC100		HA118326APFR
	IC2002		MM1503XN
	IC901		MSP3417G
	IC801		PDF015A
	IC101		PMC006A8
⚠	Q301, Q302, Q811, Q831		2SA1036K
	Q4002, Q401, Q410, Q5008, Q5009		2SA1576A
	Q903, Q904		2SA1576A
	Q303, Q6009, Q812, Q832		2SC2411K
	Q102, Q107, Q108, Q310, Q4003		2SC4081
	Q409, Q5011, Q906		2SC4081
	Q5010		2SC5876
	Q3001, Q3002, Q3010, Q4, Q5006		2SD2114K
	Q3210		DTA124EUA
	Q106		DTA143EUA
	Q101		DTC114TUA
	Q2, Q307, Q313, Q3211, Q4001		DTC124EUA
	Q810, Q830		DTC124EUA
	Q5007		HN1A01FU
	Q6008		RN4903
	Q105, Q3011		UMD2N
	Q6001		UMF21N
	Q306		UMF23N
	D106		1SR154-400
	D101, D107, D3201, D3202		1SS355
	D4001, D4002, D4005, D5004, D5006		1SS355
	D811		1SS355
	D105		DAP202U
	D1		UDZS11(B)
	D301		UDZS15(B)
	D830		UDZS3R9(B)
	D2		UDZS6R8(B)

Mark No.	Description	Part No.
D810		UDZS9R1(B)
D2011, D2012		UMZ6R8N

COILS AND FILTERS

L5005	RADIAL INDUCTOR	ATH1109
L305, L306	INDUCTOR	CTF1306
L2005	INDUCTOR	CTF1388
L301, L302, L5004	INDUCTOR	CTF1399
L901, L904	INDUCTOR	CTF1399
L101		LAU470J
L902		LCYA100J2520
L903		LCYA101J2520
L501		LCYA120J2520
L401, L403		LCYA150J2520
L402, L404		LCYA180J2520
L5003		LRCA331J

CAPACITORS

C113, C114, C141	CCSRCH100D50
C4011, C4012, C68, C69, C909	CCSRCH101J50
C117, C129	CCSRCH120J50
C306, C307, C405, C411	CCSRCH330J50
C4009	CCSRCH331J50
C2028, C2029, C5013	CCSRCH471J50
C906, C908	CCSRCH560J50
C925, C928	CCSRCH561J50
C408, C413	CCSRCH680J50
C404, C410	CCSRCH7R0D50
C406, C412	CCSRCH820J50
C403, C409, C907, C915	CCSRCJ3R0C50
C937	CEAL100M50
C938	CEAL3R3M50
C66, C67	CEANP4R7M50
C14, C341, C711, C712, C939	CEAT100M50
C139, C23, C25, C39, C44	CEAT101M10
C6649, C812, C813, C832, C833	CEAT101M10
C3111, C319, C323, C351	CEAT101M16
C130, C2035-C2037, C313, C5506	CEAT102M6R3
C2032, C4	CEAT1R0M50
C111, C310	CEAT220M25
C3128	CEAT221M6R3
C119	CEAT2R2M50
C2038, C2039, C5015	CEAT470M16
C128, C2033, C2034	CEAT471M6R3
C76	CEAT4R7M50
C5004	CKSQYF105Z50
C2005, C2011, C901, C923, C926	CKSRYB103K50
C105, C12, C17, C20, C30	CKSRYB104K16
C49, C54, C6428, C8, C905	CKSRYB104K16
C919	CKSRYB104K16
C10, C11, C13, C19, C2	CKSRYB105K10
C2109, C26, C36, C40, C4003	CKSRYB105K10
C41, C42, C45-C48, C7	CKSRYB105K10
C72, C73, C77-C82	CKSRYB105K10
C301, C5507	CKSRYB222K50
C924, C927	CKSRYB392K50
C101, C102, C104, C115	CKSRYF104Z25
C135, C136, C18, C21, C22	CKSRYF104Z25
C24, C3, C350, C38	CKSRYF104Z25
C4001, C4002, C4004, C4016, C407	CKSRYF104Z25
C443, C5005, C5010, C5014, C6	CKSRYF104Z25
C70, C71, C730, C74, C75	CKSRYF104Z25
C810, C811, C820, C830, C831	CKSRYF104Z25
C917, C918	CKSRYF104Z25
C142, C144, C43, C5, C929	CKSRYF105Z10
C701, C702	CKSYB106K10

RESISTORS

R156	RD1/4PU153J
R155	RD1/4PU393J
R701, R703	RN1/16SE1002D
R707, R708	RN1/16SE8201D
R313, R824, R909	RS1/10S0R0J
R302, R304	RS1/10S100J
R303, R5012	RS1/10S120J
R311	RS1/10S471J
R2003, R2006, R2011, R2015, R2023	RS1/10S75R0F
R2025, R2027, R2029, R2050	RS1/10S75R0F
R5007	RS1/16S1203F
R2016, R2017	RS1/16S1800F
R402, R405	RS1/16S2700F
R5006	RS1/16S2702F
R2070	RS1/16S3304F
R177	RS1/16S7500F
Other Resistors	RS1/16S###J

OTHERS

U301 TV TUNER PACK	VXF1106
X101 (15.0 MHz) CRYSTAL	CSS1653
X102(32KHz) CRYSTAL	VSS1197
X801 CERAMIC OSCILLATOR	CSS1616
X901 (18.432MHz)	VSS1189
KN405 WRAPPING TERMINAL	VNF1084
CN101 23P FFC CONNECTOR	9604S-23C
CN102 9P FFC CONNECTOR	VKN2015
CN303 KR CONNECTOR	B5B-PH-K
CN604, CN605 29P FFC CONNECTOR	VKN1433
CN4002 35P FFC CONNECTOR	VKN1439
CN5001 KR CONNECTOR	B2B-PH-K
JA2003 JACK	VKB1193
JA2004 1P PIN JACK	VKB1159
JA2010 3P PIN JACK	VKB1165
JA4001, JA4002 REMOCON JACK	RKN1004

B SCRB ASSY

SEMICONDUCTORS

IC2000	BH7236AF
IC2002	LA7213
IC2006	TC4W53FU
IC2005	TC74HC123AF
IC2004	TC7SU04FU
IC806	TC7W53FU
Q2006, Q2010, Q2011, Q806	2SA1576A
Q2002, Q2007-Q2009, Q810-Q812	2SC4081
Q820, Q821, Q823, Q824	2SD2114K
Q803, Q805	DTA124EUA
Q2001, Q2003, Q2005	HN1C01FU
Q804	UMH1N
D801, D820, D829	1SS355
D830, D831	DAN217U
D816, D819	UDZS5R1(B)

Mark	No.	Description	Part No.
	D802-D815, D822-D826, D828		UMZ6R8N
	COILS AND FILTERS		
	L2001		LAU3R9J
	L2000		LAU680J
	L801, L802	CHIP BEADS	VTL1087
	CAPACITORS		
	C846-C849		CCSRCH102J50
	C2012		CCSRCH220J50
	C871, C873		CCSRCH221J50
	C2005, C2009		CCSRCH270J50
	C2051		CCSRCH331J50
	C2092, C2093, C836-C845		CCSRCH471J50
	C2084		CEAT101M10
	C834		CEAT101M16
	C18, C27		CEAT102M6R3
	C2113, C2114		CEAT221M16
	C2001-C2003, C2105		CEAT221M6R3
	C2006		CEAT2R2M50
	C35-C37		CEAT471M6R3
	C60-C63		CEAT4R7M50
	C2089-C2091		CKSRYB104K16
	C2104		CKSRYB221K50
	C2008, C2011, C2102, C2109		CKSRYF104Z25
	C2123-C2125		CKSRYF104Z25
	C2107, C2108		CQMBA103J50
	RESISTORS		
	R10, R4, R8, R856, R861		RS1/10S0R0J
	R9		RS1/10S0R0J
	R810		RS1/10S561J
	R7, R77-R80, R842, R855		RS1/10S75R0F
	R857, R863		RS1/10S75R0F
	R2012, R2018, R2025		RS1/16S1001F
	R2016		RS1/16S1203F
	R2036		RS1/16S1803F
	R2027		RS1/16S4702F
	R2035		RS1/16S4703F
	R2007, R2022, R2030		RS1/16S6800F
	R2001, R2002, R2015		RS1/16S82R0F
	Other Resistors		RS1/16S###J
	OTHERS		
	JA801, JA802	RGB CONNECTOR	VKB1157
	CN1, CN22	29P FFC CONNECTOR	VKN1260
	X2000 (4.433619MHz)	CRYSTAL	VSS1201

C FJKB ASSY

CAPACITORS

C7303, C7305		CCSRCH471J50

OTHERS

KN7301	WRAPPING TERMINAL	VNF1084
CN7302	12P FFC CONNECTOR	9604S-12C
CN7301	CONNECTOR	9604S-23C
JA7301	4P MINIDIN SOCKET(S)	AKP1238
JA7302	JACK	VKB1208

Mark	No.	Description	Part No.

D FLKY ASSY

SEMICONDUCTORS

IC7001		PT6315
IC7002		RPM7140-H9
Q7004		2SA1576A
Q7005		2SC4081
Q7003		2SC5712
Q7001		DTC124EUA
D7004		1SS355
⚠ D7003, D7007		RF101L2S
D7001		SLR-343BBT
D7002		SLR-343DC
D7008		UDZS13(B)
D7005		UDZS15(B)
D7006		UDZS2R4(B)
D7301-D7304		UMZ6R8N

TRANSFORMERS

⚠ T7001		VTT1171

COILS AND FILTERS

L7001		LAU220J

SWITCHES AND RELAYS

S7001-S7010		VSG1024

CAPACITORS

C7021		CEAL100M50
C7016, C7027		CEAL101M10
C7017		CEAL101M16
C7003, C7004, C7023		CKSRYB103K50
C7018		CKSRYB223K25
C7001, C7007, C7014, C7015, C7020		CKSRYF104Z25
C7026, C7028, C7034		CKSRYF104Z25
C7008		CKSRYF104Z50

RESISTORS

R7018		RS1/10S221J
Other Resistors		RS1/16S###J

OTHERS

CN7001	12P FFC CONNECTOR	9604S-12C
J7001	CONNECTOR ASSY	PF03PG-B05
V7001	FLUORESCENT TUBE	VAW1091

E KEYB ASSY

SWITCHES AND RELAYS

S7201		VSG1024

OTHERS

CN7201	CONNECTOR POST	B3B-PH-K

F MAIN ASSY (DVR-640H-AV)

SEMICONDUCTORS

IC3101		AK5359ET
IC501		BD7997FS
IC2401, IC2402		CEK1285
IC1201, IC1221 (*) Refer to 7.1.11(P125)		K4H511638C-UCB3
IC5631		LM3526M-L
IC2202		MM1501XN
IC2201		MM1503XN

Mark	No.	Description	Part No.
⚠	IC5621		MM1565AF
	IC1301		NJM12904V
	IC3802		PCA9557PW
	IC3201		PCM1742KE
	IC3707		PST3813U
⚠	IC4512		S-1170B25UC-OTK
⚠	IC4507, IC4511		S-1170B33UC-OTS
⚠	IC4504		S-1170B50UC-OUJ
	IC3103		TC74VHC157FT
	IC3102		TC7SZ126FU
	IC3701		TC7WH34FU
	IC5701		TDOTG242-0F0C8
	IC101		UPC3345GC-YEB-A
	IC3202		UPC4570G2-A
	IC1001		UPD61272F1-107KA3A
	IC1102		VYW2366
	Q1801, Q1811, Q2205, Q2206		2SA1576A
	Q2501-Q2505		2SA1576A
	Q3501, Q4561		2SC4081
	Q101		RT1N141U
	D3201		DAN202U
	D3711, D3712		RB501V-40
	D101		SML-310YT

COILS AND FILTERS

L1010, L106, L107, L112	CHIP COIL	BTH1103
L1001, L1003, L1004, L1006-L1008		DTL1106
L1201, L3102, L5701	EMI FILTER	DTL1106
L1811		LCYA150J2520
L1801		LCYA390J2520

CAPACITORS

C1081	CCSSCH100D50
C158-C162, C1813	CCSSCH101J50
C3207, C3211	CCSSCH121J50
C1902, C1911	CCSSCH150J50
C1812	CCSSCH151J50
C1901, C1912	CCSSCH180J50
C1803	CCSSCH221J50
C169, C171, C509	CCSSCH390J50
C3501, C3808-C3810	CCSSCH470J50
C1084-C1087	CCSSCH5R0C50
C510	CCSSCH620J50
C264	CCSSCH680J50
C5721, C5722	CCSSCK2R0C50
C3212	CEAT102M6R3
C1708, C4507	CEVW100M16
C2506, C3106, C3214, C3216, C4542	CEVW101M16
C4563, C5624	CEVW101M16
C1001, C1003, C1005, C1014, C1020	CEVW221M4
C1071, C1074, C1235, C5701	CEVW221M4
C511	CKSQYB105K16
C5623	CKSQYB225K10
C105, C1073, C1076, C121-C123	CKSQYB475K6R3
C125, C133, C135, C152, C153	CKSQYB475K6R3
C155, C165, C168, C178, C181	CKSQYB475K6R3
C184, C4508, C4525, C4526	CKSQYB475K6R3
C4548, C4549, C4552, C5725	CKSQYB475K6R3
C157, C2221, C2222, C4551	CKSRYB105K10
C109, C111	CKSRYB334K10
C101, C102, C136	CKSRYB474K10
C1009, C1015, C1018, C1021, C1024	CKSRYF105Z10
C1044, C1047, C1052, C1055	CKSRYF105Z10
C1061, C1062, C1065, C1070, C1113	CKSRYF105Z10
C1202, C1204, C1208, C1221, C1223	CKSRYF105Z10
C1227, C1421, C1801, C1811	CKSRYF105Z10
C2208, C2209, C2501, C296	CKSRYF105Z10
C3102, C3103, C3107, C3511, C3703	CKSRYF105Z10
C3738, C3801-C3805, C5621, C5702	CKSRYF105Z10
C5711-C5720	CKSRYF105Z10
C1010, C1016, C1019, C1022, C1025	CKSSYB102K50
C1046, C1049, C1054, C1057, C1059	CKSSYB102K50
C1064, C1067, C1068, C1207	CKSSYB102K50
C1209, C1210, C1226, C1228, C1229	CKSSYB102K50
C151, C189, C261, C4527, C4550	CKSSYB102K50
C5506, C5622	CKSSYB102K50
C119, C1205, C1206, C1224, C1225	CKSSYB103K16
C129, C130, C142, C164, C1709	CKSSYB103K16
C187, C188, C221, C2223, C2224	CKSSYB103K16
C3701, C4509	CKSSYB103K16
C1026, C1029, C103, C1034, C1037	CKSSYB104K10
C104, C1040, C1043, C112, C117	CKSSYB104K10
C124, C126-C128, C132	CKSSYB104K10
C143, C144, C150, C156, C163	CKSSYB104K10
C167, C172, C175, C2301, C2302	CKSSYB104K10
C260, C3806, C3815, C3816	CKSSYB104K10
C504, C505	CKSSYB104K10
C137	CKSSYB182K50
C145, C146	CKSSYB222K50
C224, C230, C231	CKSSYB223K16
C108, C110, C139, C141, C1802	CKSSYB331K50
C3204	CKSSYB331K50
C114	CKSSYB332K50
C116	CKSSYB333K10
C232, C233	CKSSYB471K50
C148, C220, C223	CKSSYB472K25
C147, C1804, C1814, C532	CKSSYB473K10
C297, C3208, C3210	CKSSYB681K50
C138	CKSSYB682K25
C154, C236	CKSSYB683K10
C115	CKSSYB822K16
C1002, C1004, C1007, C1045, C1048	CKSSYF104Z16
C1050, C1051, C1053, C1056, C1058	CKSSYF104Z16
C1060, C1063, C1066, C1069, C1082	CKSSYF104Z16
C1105, C1203, C1211-C1214, C1222	CKSSYF104Z16
C1230, C1302, C1303, C1312, C1313	CKSSYF104Z16
C1701-C1707, C2401-C2406, C3101	CKSSYF104Z16
C3108, C3201-C3203, C3206, C3209	CKSSYF104Z16
C4561, C4562, C4565, C501, C503	CKSSYF104Z16
C5512	CKSSYF104Z16
C113 (2.2/10)	DCG1040
C502 810/16)	DCH1165
C1008, C1017, C107, C1075, C118	DCH1201
C2210, C2217, C5727-C5729 (10/10)	DCH1201
C1215 (150/4)	VCH1246

RESISTORS

R501 (0.47/1/4W)	DCN1160
R502 (0.68/1/4W)	DCN1162
R3854	RAB4CQ0R0J
R1411, R240, R3005, R3102, R3707	RAB4CQ103J
R3801-R3806	RAB4CQ223J

Mark	No.	Description	Part No.
	R1245, R1246, R1255, R1256		RAB4CQ330J
	R1265, R1266, R1273, R1274		RAB4CQ330J
A	R3810-R3813, R3824		RAB4CQ330J
	R254		RAB4CQ473J
	R1241, R1242, R1248, R1249		RAB4CQ560J
	R1261, R1262, R1268, R1269		RAB4CQ560J
	R1281-R1283, R1287		RAB4CQ560J
	R3208, R3223		RN1/16SC56R0D
	R3207, R3226		RN1/16SE1502D
	R3209, R3224		RN1/16SE8201D
	R1001, R1002, R133, R2401		RS1/10S0R0J
	R4513, R4514, R4517, R4520-R4524		RS1/10S0R0J
	R4527, R4591-R4593, R5702		RS1/10S0R0J
B	R1302, R1303, R1312, R1313		RS1/16S1001F
	R5714		RS1/16S1501F
	R2502, R2505, R2508, R2511, R2514		RS1/16S2000F
	R1301		RS1/16S4700F
	R1052		RS1/16S6200F
	R3505		RS1/16S75R0F
	R1054		RS1/16S9100F
	R181		RS1/16SS4701F
	R510, R511		RS1/4SA2R0J
	Other Resistors		RS1/16S###J

C

OTHERS

CN502	4P CONNECTOR	DKN1288
CN501	D-SOCKET(14P)	DKN1312
CN601	5P CONNECTOR	DKN1402
CN101	CONNECTOR	DKN1404
X201 (16.93MHz)	OSC	DSS1152
CN1402	07P CONNECTOR	RKN1048
CN5601	CONNECTOR POST	S10B-PH-K
CN2401	KR CONNECTOR	S13B-PH-K
CN2301	35P CONNECTOR	VKN1439
CN401	CONNECTOR	VKN2029

D

CN1401	CONNECTOR	VKN2030
CN3802	CONNECTOR	VKN2045
CN3801	CONNECTOR	VKN2050
X1002 (27MHz)	CRYSTAL	VSS1191
X1001 (24.576MHz)	CRYSTAL	VSS1192
X5701 (6MHz)	CRYSTAL	VSS1210

F MAIN ASSY (DVR-540H-S)

SEMICONDUCTORS

E

IC3101		AK5359ET
IC501		BD7997FS
IC2401, IC2402		CEK1285
IC1201, IC1221 (*)	Refer to 7.1.11(P125)	K4H511638C-UCB3
IC1301		NJM12904V
IC3201		PCM1742KE
IC3707		PST3813U
⚠IC4512		S-1170B25UC-OTK
⚠IC4507, IC4511		S-1170B33UC-OTS
⚠IC4504		S-1170B50UC-OUJ
IC3701		TC7WH34FU
IC101		UPC3345GC-YEB-A
IC3202		UPC4570G2-A
IC1001		UPD61272F1-107KA3A
IC1102		VYW2365

F

Mark	No.	Description	Part No.
	Q1801, Q1811, Q2205, Q2206		2SA1576A
	Q2501-Q2505		2SA1576A
	Q3501, Q4561		2SC4081
	Q101		RT1N141U
	D3201		DAN202U
	D3711, D3712		RB501V-40
	D101		SML-310YT

COILS AND FILTERS

L1010, L106, L107, L112	CHIP COIL	BTH1103
L1001, L1003, L1004, L1006-L1008		DTL1106
L1201	EMI FILTER	DTL1106
L1811		LCYA150J2520
L1801		LCYA390J2520

CAPACITORS

C1081	CCSSCH100D50
C158-C162, C1813	CCSSCH101J50
C3207, C3211	CCSSCH121J50
C1902, C1911	CCSSCH150J50
C1812	CCSSCH151J50
C1901, C1912	CCSSCH180J50
C1803	CCSSCH221J50
C169, C171, C509	CCSSCH390J50
C3501	CCSSCH470J50
C1084-C1087	CCSSCH5R0C50
C510	CCSSCH620J50
C264	CCSSCH680J50
C3212	CEAT102M6R3
C1708, C4507	CEVW100M16
C2506, C3106, C3214, C3216, C4542	CEVW101M16
C4563	CEVW101M16
C1001, C1003, C1005, C1014, C1020	CEVW221M4
C1071, C1074, C1235	CEVW221M4
C511	CKSQYB105K16
C105, C1073, C1076, C121-C123	CKSQYB475K6R3
C125, C133, C135, C152, C153	CKSQYB475K6R3
C155, C165, C168, C178, C181	CKSQYB475K6R3
C184, C4508, C4525, C4526	CKSQYB475K6R3
C4548, C4549, C4552	CKSQYB475K6R3
C157, C4551	CKSRYB105K10
C109, C111	CKSRYB334K10
C101, C102, C136	CKSRYB474K10
C1009, C1015, C1018, C1021, C1024	CKSRYF105Z10
C1044, C1047, C1052, C1055	CKSRYF105Z10
C1061, C1062, C1065, C1070, C1113	CKSRYF105Z10
C1202, C1204, C1208, C1221, C1223	CKSRYF105Z10
C1227, C1421, C1801, C1811	CKSRYF105Z10
C2208, C2209, C2501, C296	CKSRYF105Z10
C3102, C3103, C3511, C3703, C3738	CKSRYF105Z10
C3801-C3805	CKSRYF105Z10
C1010, C1016, C1019, C1022, C1025	CKSSYB102K50
C1046, C1049, C1054, C1057, C1059	CKSSYB102K50
C1064, C1067, C1068, C1207	CKSSYB102K50
C1209, C1210, C1226, C1228, C1229	CKSSYB102K50
C151, C189, C261, C4527, C4550	CKSSYB102K50
C119, C1205, C1206, C1224, C1225	CKSSYB103K16
C129, C130, C142, C164, C1709	CKSSYB103K16
C187, C188, C221, C3701, C4509	CKSSYB103K16
C1026, C1029, C103, C1034, C1037	CKSSYB104K10
C104, C1040, C1043, C112, C117	CKSSYB104K10

Mark No.	Description	Part No.
	C124, C126-C128, C132	CKSSYB104K10
	C143, C144, C150, C156, C163	CKSSYB104K10
	C167, C172, C175, C2301, C2302	CKSSYB104K10
	C260, C3806, C504, C505	CKSSYB104K10
	C137	CKSSYB182K50
	C145, C146	CKSSYB222K50
	C224, C230, C231	CKSSYB223K16
	C108, C110, C139, C141, C1802	CKSSYB331K50
	C3204	CKSSYB331K50
	C114	CKSSYB332K50
	C116	CKSSYB333K10
	C232, C233	CKSSYB471K50
	C148, C220, C223	CKSSYB472K25
	C147, C1804, C1814, C532	CKSSYB473K10
	C297, C3208, C3210	CKSSYB681K50
	C138	CKSSYB682K25
	C154, C236	CKSSYB683K10
	C115	CKSSYB822K16
	C1002, C1004, C1007, C1045, C1048	CKSSYF104Z16
	C1050, C1051, C1053, C1056, C1058	CKSSYF104Z16
	C1060, C1063, C1066, C1069, C1082	CKSSYF104Z16
	C1105, C1203, C1211-C1214, C1222	CKSSYF104Z16
	C1230, C1302, C1303, C1312, C1313	CKSSYF104Z16
	C1701-C1707, C2401-C2406, C3101	CKSSYF104Z16
	C3201-C3203, C3206, C3209	CKSSYF104Z16
	C4561, C4562, C4565, C501, C503	CKSSYF104Z16
	C113 (2.2/10)	DCG1040
	C502 (10/16)	DCH1165
	C1008, C1017, C107, C1075, C118	DCH1201
	C2210, C2217 (10/10)	DCH1201
	C1215 (150/4)	VCH1246

RESISTORS

	R501 (0.47/1/4W)	DCN1160
	R502 (0.68/1/4W)	DCN1162
	R1411, R240, R3005, R3102, R3707	RAB4CQ103J
	R3801-R3806	RAB4CQ223J
	R1245, R1246, R1255, R1256	RAB4CQ330J
	R1265, R1266, R1273, R1274	RAB4CQ330J
	R3810-R3813, R3824	RAB4CQ330J
	R254	RAB4CQ473J
	R1241, R1242, R1248, R1249	RAB4CQ560J
	R1261, R1262, R1268, R1269	RAB4CQ560J
	R1281-R1283, R1287	RAB4CQ560J
	R3208, R3223	RN1/16SC56R0D
	R3207, R3226	RN1/16SE1502D
	R3209, R3224	RN1/16SE8201D
	R1001, R1002, R133, R2401	RS1/10S0R0J
	R4513, R4514, R4520-R4524, R4527	RS1/10S0R0J
	R4591-R4593	RS1/10S0R0J
	R1302, R1303, R1312, R1313	RS1/16S1001F
	R2502, R2505, R2508, R2511, R2514	RS1/16S2000F
	R1301	RS1/16S4700F
	R1052	RS1/16S6200F
	R3505	RS1/16S75R0F
	R1054	RS1/16S9100F
	R181	RS1/16SS4701F
	R510, R511	RS1/4SA2R0J
	Other Resistors	RS1/16S###J

Mark No.	Description	Part No.
OTHERS		
	CN502 4P CONNECTOR	DKN1288
	CN501 CONNECTOR	DKN1312
	CN601 5P CONNECTOR	DKN1402
	CN101 CONNECTOR	DKN1404
	X201 (16.93MHz) OSC	DSS1152
	CN1402 07P CONNECTOR	RKN1048
	CN2401 KR CONNECTOR	S13B-PH-K
	CN2301 35P CONNECTOR	VKN1439
	CN401 CONNECTOR	VKN2029
	CN1401 CONNECTOR	VKN2030
	CN2601 CONNECTOR	VKN2038
	CN3801 CONNECTOR	VKN2050
	X1002 (27MHz) CRYSTAL	VSS1191
	X1001 (24.576MHz) CRYSTAL	VSS1192

G DVJB ASSY (DVR-640H-AV Only)

SEMICONDUCTORS

	IC101	ADV7172KSTZ
	IC103	HY57V161610ETP-8
	IC105, IC107	NJU7013F
⚠	IC106	S-1170B25UC-OTK
	IC104	TC7WHU04FU
	IC108	UPD72852AGB-8EU-A
	IC102	UPD72893BF1-FN3
	Q101-Q104	2SA1576A
	D101	HVC359
	D102	HVC362

COILS AND FILTERS

	F101 CHIP COIL	DTF1069
	L106, L107 EMI FILTER	DTL1106
	L101, L102	LCYA100J2520
	L109, L111	LCYA150J2520
	L108, L110	LCYA180J2520
	L104, L105 COIL	VTH1043

CAPACITORS

	C200, C218	CCSRCH100D50
	C258	CCSRCH271J50
	C211, C213	CCSRCH330J50
	C212	CCSRCH5R0C50
	C254, C255	CCSRCH8R0D50
	C107, C112	CCSSCH330J50
	C161-C163	CCSSCH470J50
	C103, C108	CCSSCH680J50
	C104, C109	CCSSCH7R0D50
	C106, C111	CCSSCH820J50
	C105, C110	CCSSCJ3R0C50
	C144, C220, C223	CEVW221M4
	C101, C102, C122, C126, C140	CKSQYF106Z10
	C142, C147, C204, C207, C214	CKSQYF106Z10
	C230, C233, C248, C252	CKSQYF106Z10
	C222	CKSQYF475Z10
	C201, C205	CKSRYB104K16
	C203, C210, C245, C249, C250	CKSRYF104Z25
	C124, C127-C135, C141, C143	CKSRYF105Z10
	C146, C148-C160, C206, C215	CKSRYF105Z10
	C231, C240, C241, C243, C244	CKSRYF105Z10
	C246, C247, C251, C253	CKSRYF105Z10
	C256, C257	CKSRYF105Z10

Mark No.	Description	Part No.
	C216	CKSRYF473Z25
	C145, C235	CKSSYB103K16
	C113-C117, C123, C125, C136	CKSSYF104Z16
	C232, C234, C237, C242	CKSSYF104Z16
	C259-C261	CKSSYF104Z16

RESISTORS

	R144-R149, R155-R158	RAB4CQ103J
	R169-R172, R185-R188	RAB4CQ103J
	R150, R151	RAB4CQ470J
	R248	RN1/16SE9101D
	R141, R197, R198, R211, R215	RS1/10S0R0J
	R105, R111	RS1/16S1500F
	R268	RS1/16S5101F
	R264-R267	RS1/16S56R0D
	R135	RS1/16S6800F
	Other Resistors	RS1/16S###J

OTHERS

	JA101 1394-TERMINAL	VKN2028
	CN101 CONNECTOR	VKN2045
	X102 (24.576MHz) CRYSTAL	VSS1184
	X101 (27.000MHz) VCXO	VSS1195

H USBB ASSY (DVR-640H-AV Only)

COILS AND FILTERS

	L105, L106 COIL	VTH1054
	L101-L104 CHIP FERRITE BEAD	VTL1169

CAPACITORS

	C102	CEVW221M6R3
	C101	CKSRYF104Z25

RESISTORS

	Other Resistors	RS1/16S###J

OTHERS

	CN101 CONNECTOR	B10B-PH-K
	JA101 USB CONNECTOR	VKB1226
	JA102 USB CONNECTOR	VKB1227

I ATAB ASSY

RESISTORS

	R13-R20	RAB4C0R0J

OTHERS

	CN12 40P ATA CONECTOR	VKN1816
	CN11 40P CONNECTOR	VKN1818

J POWER SUPPLY UNIT

POWER SUPPLY UNIT has no service part.

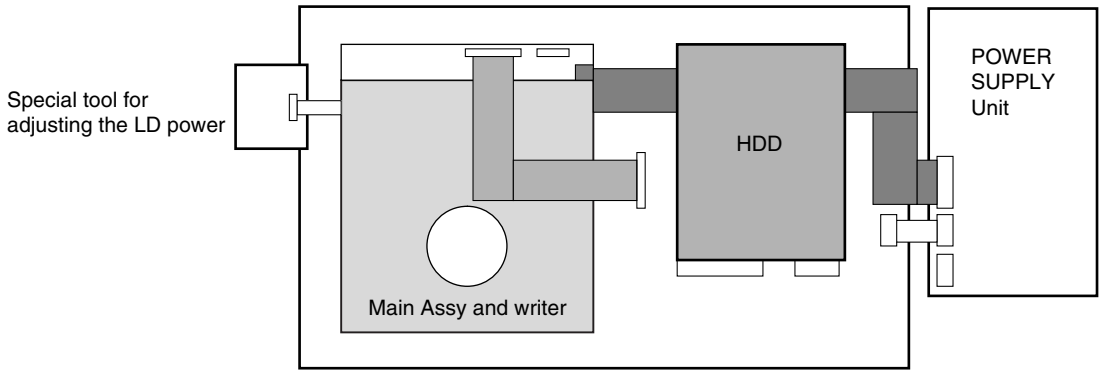
6. ADJUSTMENT

[Purpose]
If the combination of MAIN Assy and LOADER Assy is changed, the adjusted value for LD power will be shifted, and stable playback or recording of a disc will become impossible.
Therefore, when the combination of MAIN Assy and LOADER Assy is changed, LD power adjustment and adjustment for disc judgment will be necessary.
Be sure to do this adjustment at following cases.
- When replacing MAIN Assy
- When replacing LOADER Assy

[Tools to be used]
- Special tool for adjusting the LD power (GGF1559)
- 10-pin FFC flexible cable (GGD1477)
- CD-ROM test disc: CDT-313 (GGV1054)
- DVD dual-layer test disc: DVDT-002 (GGV1036)

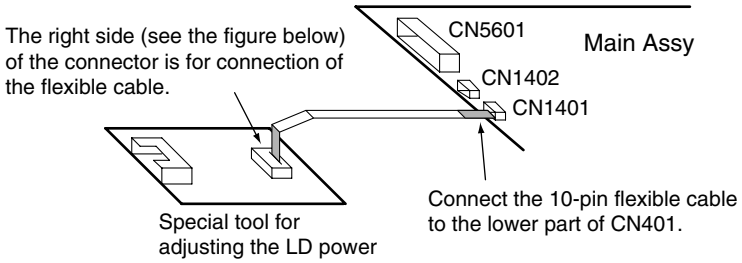
[Notes]
Never turn the power off while any of the following operations is in progress:
- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

[Connections]
- Connections for adjusting the LD power

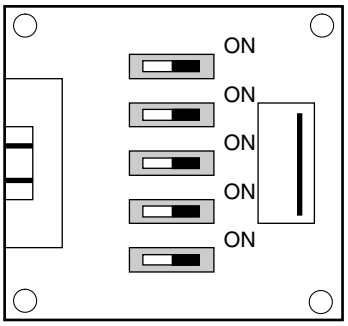


Note: Before adjusting the LD power, disconnect the power to the HDD and the flexible cable for ATA (40-pin).

- To which the special tool for adjusting the LD power is connected



- Setting of the switches on the special tool for adjusting the LD power



Set all five switches to ON.

[Procedures]

1. Connect the special tool for adjusting the LD power, as shown on the previous page.

2. Turn on the DVD recorder. ("POWER ON" will be indicated on the FL display.)

3. The tray opens.
   Make sure that powered opening of the tray is working.
   If the tray does not open under power:
   a. Flexible cables or other cables may not be connected. (Connection of cables to the HDD is not necessary.)
   b. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.
   c. Failure in the loader, MAIN Assy, or POWER SUPPLY Unit is suspected.

   Make sure that the LED next to CN401 is lit.
   If the LED flashes:
   a. Wrong setting of the switches on the special tool for adjusting the LD power, or failure in the special tool or the 10-pin flexible cable, is suspected.

4. Manually close the tray. Adjust the LD power.
   Make sure that the LED next to CN401 is lit.
   If the LED flashes three or four times in a burst:
   a. The PU flexible cable may not be connected.
   b. Failure in the Traverse Mechanism or MAIN Assy is suspected.

5. After adjusting the LD power, invoke powered opening of the tray.
   Make sure that the LED next to CN401 flashes once per burst.

6. Load the DVDT-002 on the tray.
   The tray automatically closes after 15 seconds.
   The tray repeatedly closes and opens automatically until a disc is loaded.

7. After adjustment for judging the DVD disc, the tray automatically opens.
   Make sure that the LED next to CN401 flashes twice in a burst.
   If the LED flashes only once per burst:
   a. A disc other than the DVDT-002 may be loaded. Be sure to load the DVDT-002.

8. Replace the DVDT-002 with the CDT-313.
   The tray automatically closes after 15 seconds.
   The tray repeatedly closes and opens automatically until a disc is loaded.

9. After adjustment for judging the CD disc, the tray automatically opens.
   Make sure that the LED next to CN401 is unlit.
   If the LED flashes twice in a burst:
   a. A disc other than the CDT-313 may be loaded. Be sure to load the CDT-313.

10. Unload the CDT-313 and manually close the tray.

11. Turn off the recorder by holding the POWER button pressed for several seconds.

12. Disconnect the 10-pin FFC cable from the MAIN Assy.

13. Set the power sources for the HDD and the flexible connecting cable for ATA (40-pin) to their original statuses.

[Points to be confirmed]

1. Make sure that real-time recording on a DVD-R/-RW/RAM will finish normally.
2. Play back a recorded disc and make sure that playback is performed without a problem.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

◆ Jigs and Tools to be used

Remote control unit for serving (GGF1381)
DVD Recorder Data Disc (Type 2)(*)
Download disc
Test disc (GGV1025)
DVD-RW (Commercial goods)

(*) Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

◆ Service Mode List

1. Setting type

Item	When to perform
7.1.1 Model setting	• When replacing MAIN ASSY or TUJB ASSY.
7.1.2 CPRM ID number and data	• When "CPRM ERROR" is displayed on the display screen. • After the MAIN ASSY or HDD replaced.
7.1.3 Firmware downloading method	• After model setting (After replacing MAIN ASSY, TUJB ASSY). • After the HDD is replaced. • When NG is displayed for the version infomation in Service mode.
7.1.4 Video Adjustment for Specific Area	• When a flicker appears on the tuner display like a horizontal or vertial out-of-sync symptom
7.1.5 (4) OSD Filter Setting	• When a character flicker appears on the OSD depending on the monitor.

2. Diagnosis type

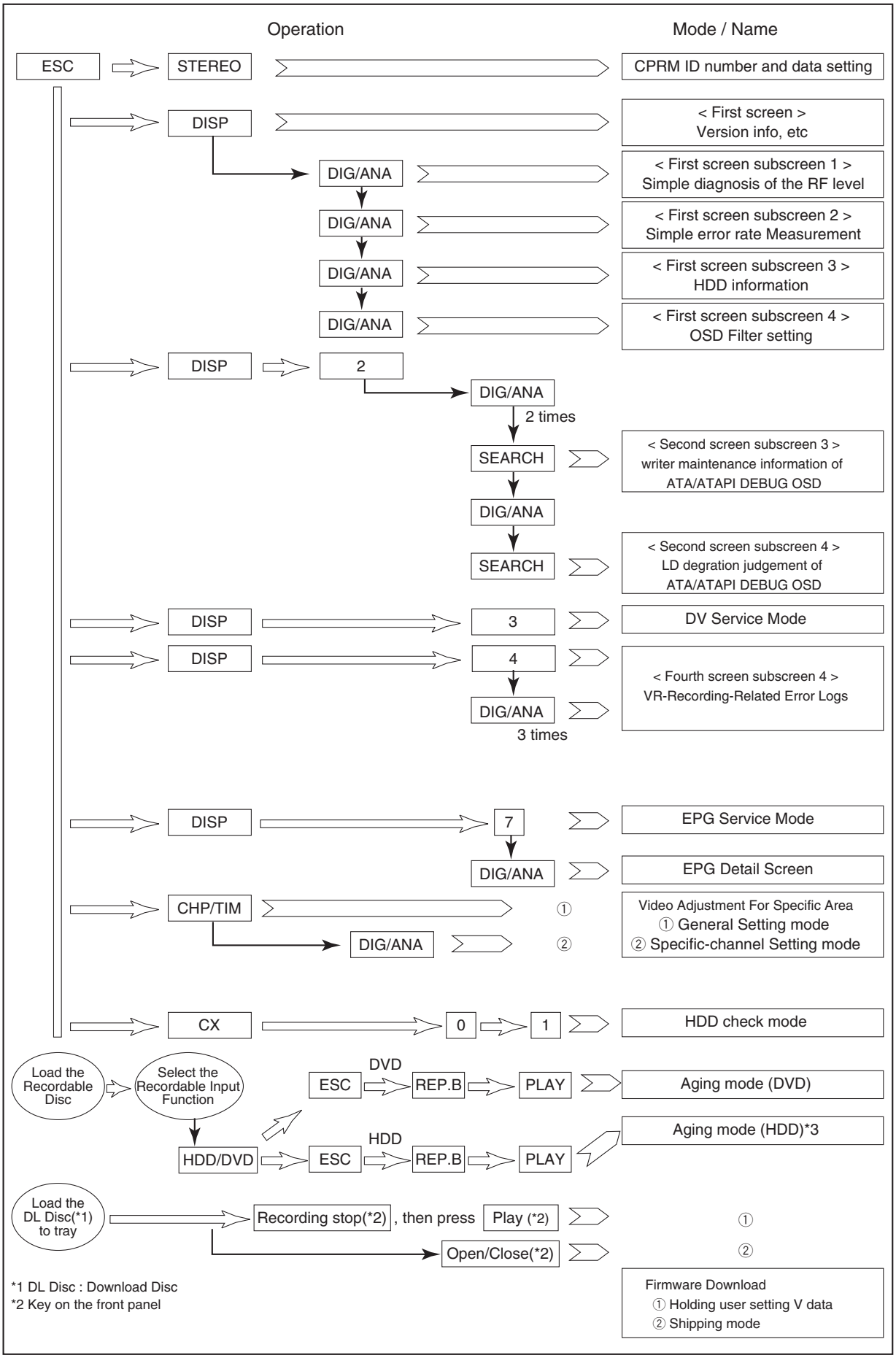
7.1.5 Service Mode First screen : Version, Simple diagnosis of the RF level, Simple error rate measurement, HDD information. Second screen : ATA/ATAPI debug screen, LD degration judgement Fourth screen : VR-recording-related error loss	• When confirming version infomation • When confirming the state of DRIVE Assy.
7.1.6 DV Service Mode (DVR-640H-AV only)	When any failures occurs while a DV device connected
7.1.7 EPG Service Mode	When EPG data cannnot be or can be only partially obtained.
7.1.8 Aging Mode	When a claimed sympton is difficult to reproduce.
7.1.9 HDD Check Mode	When checking the quality of HDD.

◆ Necessary procedure List when replacing Assys

Following is the surely necessary procedures and the produet state after changing when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY TUJB ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmwave download	×	○
HDD	1. CPRM setting 2. Firmwave download	○	×

◆SERVICE MODE MAP



7.1.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

[Procedures]

① After power on, the following screen is displayed on TV monitor. Press four digits properly (for example " 0202 ") by using the remote control unit for service, according to the screen information.

[DVR-640H-AV model]

```
[Recorder's Model Setting]
  Input the number using the remote for Service.

> - - -

   Input No.      Model
   [  0302   :   DVR-640H/WY ]
```

[DVR-540H/DVR-440H series model]

```
[Recorder's Model Setting]
  Input the number using the remote for Service.

> - - -

   Input No.      Model
    [  0202   :   DVR-540H/WY ]
    [  0203   :   DVR-540H/WV ]
    [  0602   :   DVR-440H/WY ]
    [  0204   :   DVR-540H/WY/RE ]
    [  0604   :   DVR-440H/WY/RE ]
    [  0403   :   DVR-440H/WV ]
```

② Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.

③ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

④ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name (for example " DVR-540H/WY ").

```
DVR-540H/WY        VERSION  : 1.**
  SYSCON    : RELEASE_100
              Rev     :1.1000
TUNERCON    : 198.000                    OK
    DRIVE   : DVD-RW DVR-L11X            OK
              1.00                       OK

     HDD    : WDC WD1600BB-xxGUCx        160

  IRCON     : 1.00                       OK

  DEVICE    : E2R-FE  1.2     FLASH  : 64M
  REGION    : 2               C : * * * * * * * * *
```

⑤ End

7.1.2 CPRM ID NUMBER AND DATA SETTING

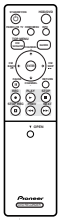
[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD–RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

[Tools to be used]



Remote control unit supplied with the unit (VXX3129)

Remote control unit for servicing (GGF1381)

DVD Recorder Data Disc (Type 2)

Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

■ Input Flow of the ID No. and ID data when exchanging HDD or MAIN Assy

- When exchanging HDD or MAIN Assy, or both exchanged
- When exchanging HDD

When displayed "CPRM ERR"

Power → ON

When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.

When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.

■ Confirmation of the CPRM ID No.

■ Deletion of the CPRM ID No.(when ID No. is registered.)

■ Input of the CPRM ID No. and ID data

Power → OFF → ON
Normal operation mode

End

● New HDD/when there is error on recorded contents

● Exchanging to the original HDD(when there is no error on the recorded contents.)

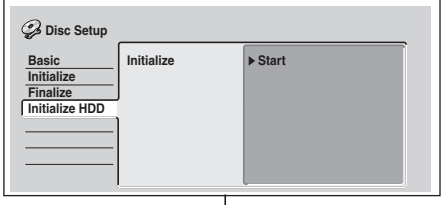
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
Execute HDD Initialize from the Disc Setup menu.

[CAUTION]

All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, **OBTAIN THE USER'S PRIOR CONSENT** to that effect.

*Use Remote Control of the unit

Execute
HOME MENU → Disc Setup → Intialize
HDD → Initialize → Start



*Goes to normal operation with no caution

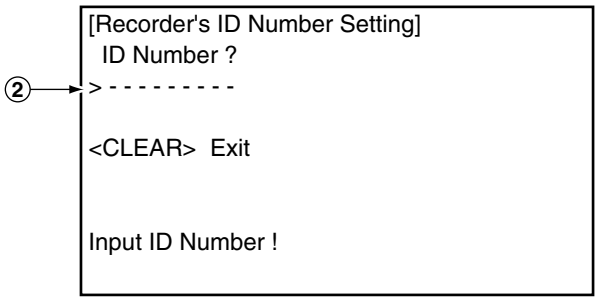
End

After OSD displaying "Finished" after initilaization, reboot.

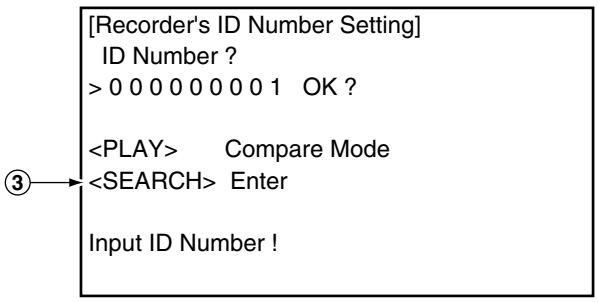
How to Input the ID Number and ID Data

① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

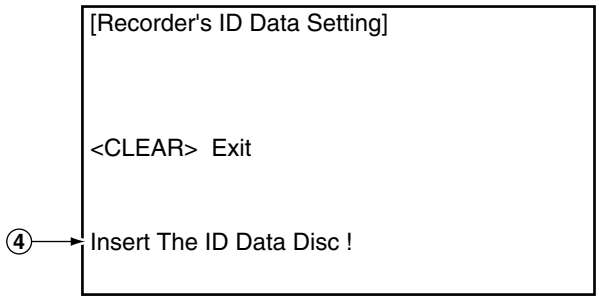
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



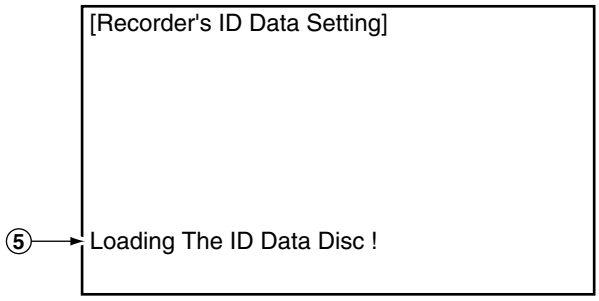
③ After inputting the number, press SEARCH keys to register the ID number.



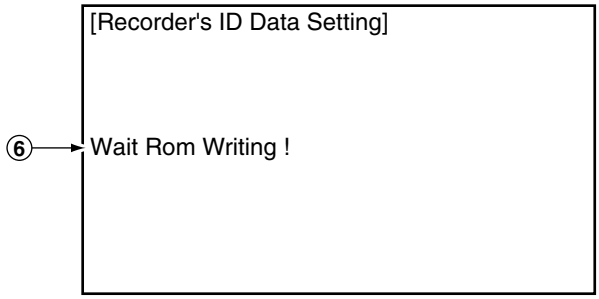
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

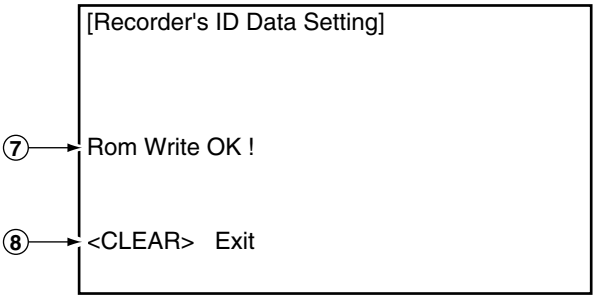


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.

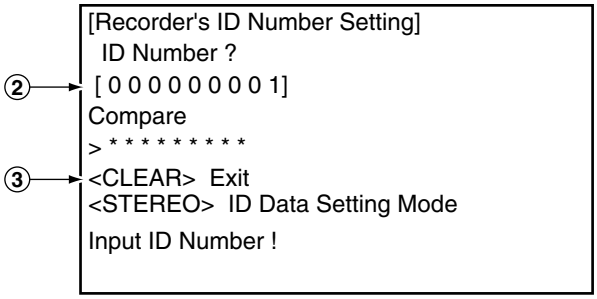


[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

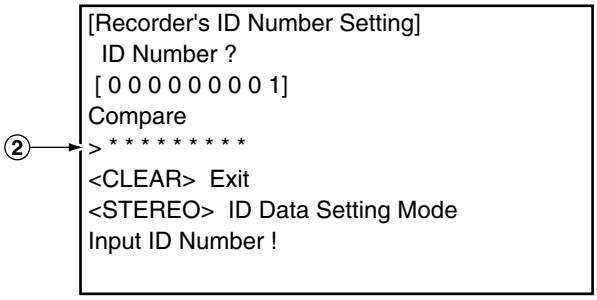
③ To exit this mode, press CLEAR key.



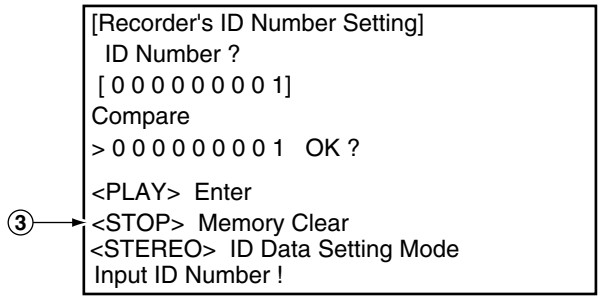
[How to Clear the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



7.1.3 FIRMWARE DOWNLOADING METHOD

[Purposes]

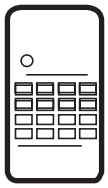
1. When the main board is replaced, the firmware versions for the system control computer, drive, IR microcomputer and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above four, firmware downloading is necessary in the following two cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TUJB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

There are the following two methods for downloading: disc download and serial download

1. DISC DOWNLOAD

[Tools to be used]



Remote control unit for servicing (GGF1381)

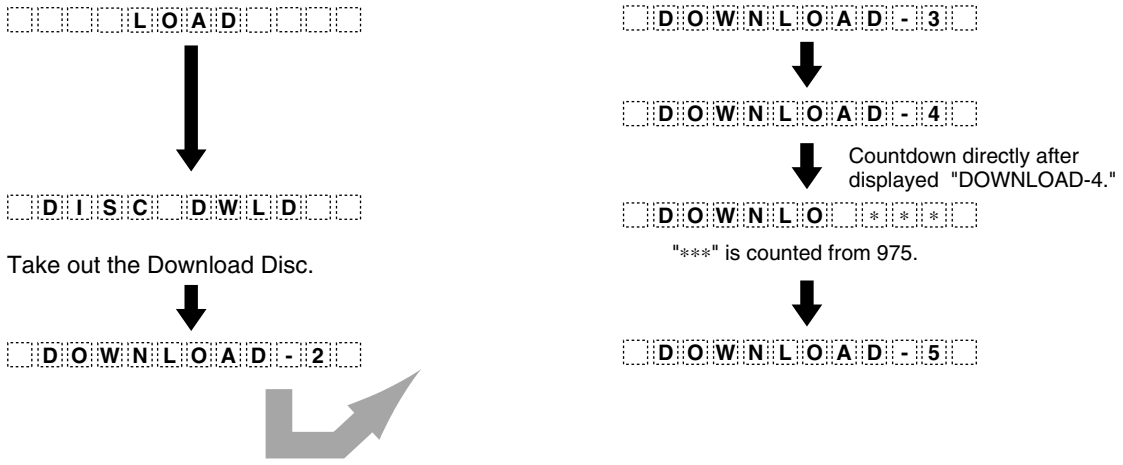
Download DISC

[Notes]

Be sure NOT to turn off the unit during downloading.
If the unit is turned off during downloading, the SYSCON, TUNERCON, DRIVE and IR Blaster programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the download disc on the tray. Press a " Record Stop " button while pressing a "PLAY" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display



* After download is completed, the power turns off, and turns on and a disc tray closes automatically.
* It takes for about 7-8 minutes until download is completed.

④ Press and hold a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during downloading, proceed as follows before performing download again:

- In a case where downloading was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the MAIN ASSY.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be downloaded from the disc or through serial communication, replace the MAIN Assy.

- In a case where downloading was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the TUNERCON microcomputer (IC101 : TUJB ASSY).

- In a case where downloading was incorrectly terminated while "DOWNLOAD-5" was displayed on the FL display
  The program for the IR Blaster microcomputer will not function correctly.
  If the program cannot be downloaded from the disc, replace the IR Blaster microcomputer (IC801 : TUJB ASSY).

(2) The setting way to shipping mode (Reference)
At ② lines of the [Procedures], press "OPEN/CLOSE" button while pressing REC STOP button.

2. SERIAL DOWNLOAD

[Purposes]

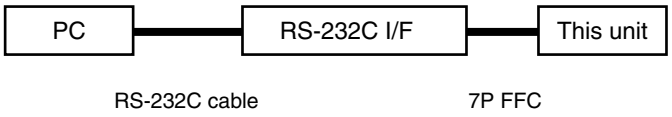
1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized. In such a case, the versions for the above three must be matched.
2. This method is used when disc downloading fails.

[Tools to be used]

* PC with serial port
* RS-232C straight cable
* RS-232C I/F jig (GGF1348)
* 7P FFC (VDA1681)
* Download program (UFU.exe)
* Firmware

[Connection]

Connect as follows:



[Procedures]

① Connect the 232C I/F jigs above way.

② Turn on the PC and start the " UFU.exe ".

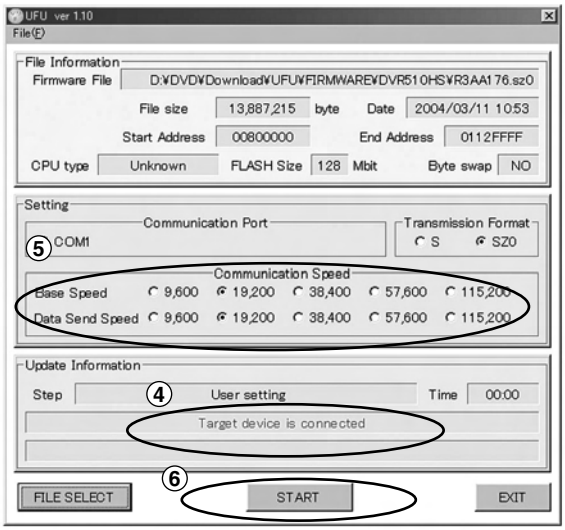
③ Select the Firmware file. ("sz0" file)

④ Turn the DVD recorder on and start the download program.
" Target Device is connected " is appeared on the screen.

⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and download may fail.
  In this case, please click "START" again.
- Other factors can be considerd if download fails 3 times or more.
- And it takes about 20 minutes for updating the firmware.

* TUNERCON and IR con program is not downloaded this way, so do disc-download for TUNERCON and IR con.

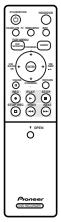


7.1.4 VIDEO ADJUSTMENT FOR SPECIFIC AREA

[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]



Remote control unit supplied with the unit (VXX3129)

Remote control unit for servicing (GGF1381)

1. Specific-Channel Setting mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

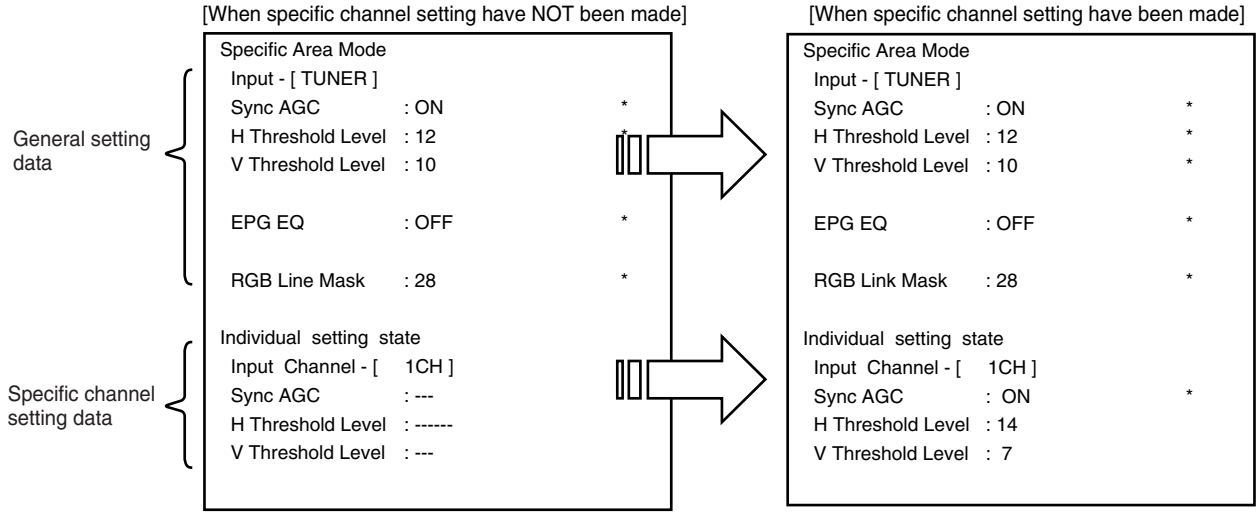
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."


[When specific channel setting have NOT been made]
[When specific channel setting have been made]
General setting data
Specific channel setting data
Specific Area Mode
Input - [TUNER]
Sync AGC : ON *
H Threshold Level : 12 *
V Threshold Level : 10 *
EPG EQ : OFF *
RGB Line Mask : 28 *
RGB Link Mask : 28 *
Individual setting state
Input Channel - [1CH]
Sync AGC : ---
H Threshold Level : ------
V Threshold Level : ---
Sync AGC : ON *
H Threshold Level : 14
V Threshold Level : 7

[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H Threshold Level : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *

Individual  setting  state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

2. General Setting mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

[General Setting mode screen]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

  RGB Line Mask     : 28          *

This channel is set up
  individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)
Key operations in Specific Area Setting mode of the remote control units are shown in the table below
(the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A], [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev ×3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [×3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[<<|| STILL STEP], [STILL STEP ||>>]	Sets Line Mask setting at RGB signal is inputted.	22 - 40 (Default: 28)	[<<|| STILL STEP] : Decreasing 1 by 1 in the range 22 to 40. (Cyclic operation) [STILL STEP ||>>] : Increasing 1 by 1 in the range 22 to 40. (Cyclic operation)	×	○
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

7.1.5 SERVICE MODE

Overview and purposes

To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:
[1] First screen : Version, HDD information, etc.
[2] Second screen : ATA/ATAPI debug screen (Writer information)
[4] Fourth screen : VR-recording-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

1. Version information, etc. (First screen)

[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measuremen, HDD information, and OSD Filter setting

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

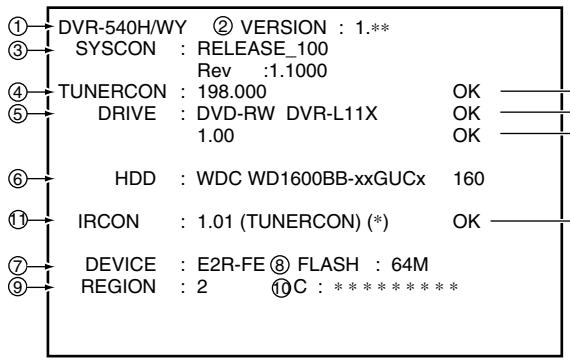
[How to enter] While the GUI screen is not displayed, press the ESC then DISP keys.

How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change

[How to quit] Press the ESC key.

[Description]

(1) First screen


① DVR-540H/WY ② VERSION : 1.**
③ SYSCON : RELEASE_100
Rev :1.1000
④ TUNERCON : 198.000 OK
⑤ DRIVE : DVD-RW DVR-L11X OK
1.00 OK
⑥ HDD : WDC WD1600BB-xxGUCx 160
⑪ IRCON : 1.01 (TUNERCON) (*) OK
⑦ DEVICE : E2R-FE ⑧ FLASH : 64M
⑨ REGION : 2 ⑩C : * * * * * * * * *

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.

OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.

OK : Appropriate version compared with that of the firmware of the system control computer
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.

OK : Appropriate version of the IRCON (when operated by IR u-com)
NG+ : The version of the drive IR blaster computer is advanced.
Measures to be taken: Download the firmware.
NG- : The version of the IR blaster microcomputer is older.
Measures to be taken: Download the firmware.

OK : Appropriate version of the TUNERCON
(when operated by TUFL u-com)

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ IR Braster u-com information
(Version when operated by IR Braster u-com)
(*)(TUNERCON when operated by TUFL Con)

• Details on HDD data are described below:

HDD : WDC10234564 # 160

- Capacity of the HDD (unit: Gbytes)
- HDD identification error indication
- Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the ATA connector. • Replace the ATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the ATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

(2) Simple diagnosis of the RF level (Subscreen 1)

[Purposes] To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode

[How to enter] While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.

[How to quit] Press the ESC key.

[Description]

```
DVR-540H/WY      VERSION : 1.**
  SYSCON  : RELEASE_***
            Rev    :1.******
TUNERCON  : 198.000                 OK
   DRIVE  : DVD-RW DVR-L11X         OK
            1.00                    OK

     HDD  : WDC WD1600BB-xxGUCx     160

  DEVICE  : E2R-FE    FLASH : 64M
  REGION  : 2         C : *********

 Input CH : ** ch
 Freq Diff: Low 1
 AGC Volt : **** mV
```

- Input channel
- Input frequency difference
- AGC voltage

Subscreen 1

1) Frequency Difference (Freg Diff)

How much tuning is off is monitored, as shown below:

Input Frequency	Display
Faraway	High 7
High (within 200kHz)	High 1~5
Just Tune	Center
Low (within 200kHz)	Low 1~5
Low (over 200kHz)	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	AGC VOL
Intense field area (Clear image)	70 dBµ or more	3100 mV or less
Less intense field area (Noise may be generated.)	50 dBµ or more 70 dBµ or less	3100 - 4400mV
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBµ or more 50 dBµ or less	4400 mV or more (It is unable to discriminate under the weak field area.)
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBµ or less	4400 mV or more (It is unable to discriminate.)

Tips:

For good reception, the field intensity must be 50 dBµ or more (AGC Volt 4400 mV or less).
For accurate measurement, use a field intensity meter.

(3) Simple Error Rate Measurement (Subscreen 2)

[How to enter]
- While the User Operation screen is displayed, press the [ESC] then [DISP] keys, then the [DIG/ANA] key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the [DIG/ANA] key.

[How to quit] Press the [ESC] key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1 on page 89.

ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

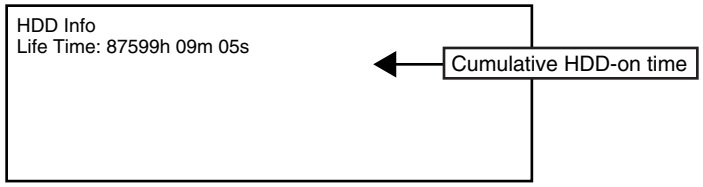
Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	–	–	8.0×10^{-4}
DVD-R	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}
DVD-RW	Video mode	Finalized	1.0×10^{-3}
		Not finalized	1.0×10^{-3}

(4) HDD information (Subscreen 3)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

(5) OSD FILTER SETTING (SUB screen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as charavter flicker, appears on the monitor, select the filter response.

[Tools to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.

OSD Filter Setting

OSD FILTER : 4

Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	–	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	–	–

2. ATA/ATAPI Debug Screen (Second screen)

[Purposes]

To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]

Remote control unit for servicing (GGF1381)

Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

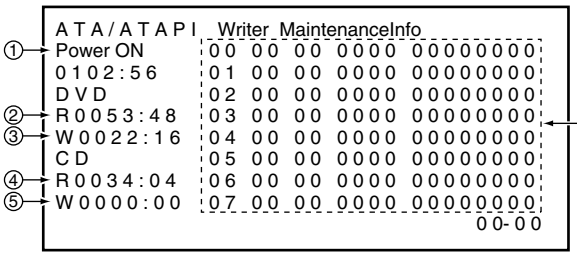
(1) Writer maintenance information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



Error log for the Writer (Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours
The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.
[Note on lighting time data for each LD]
Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

(2) LD degration judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

[How to enter]
- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]
- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25°C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025).
  As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed.
For details on each item and the conditions of updating the values, see Table 2 below.

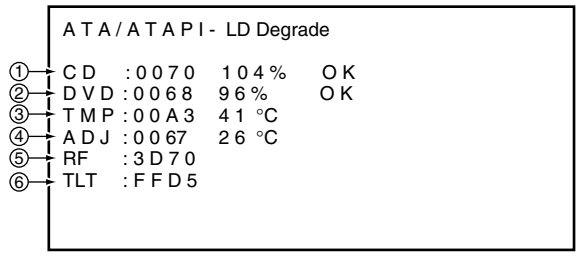


Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs and DVDs are both NG, replace the drive.

3. VR-Recording-Related Error Logs (Fourth screen)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter]

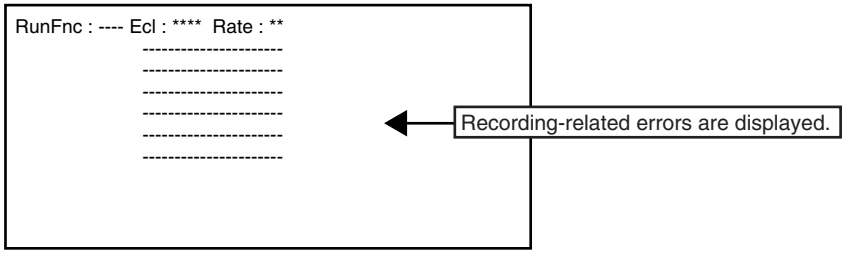
- While the User Operation display is displayed, press the [ESC], [DISP], then [4] keys, in that order.
- While any subscreen of the fourth screen is displayed, press the [DIG/ANA] key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the [ESC] key.

[Description of each subscreen]

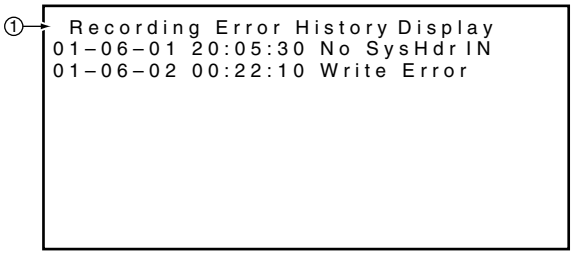
(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."



(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the [SPEED+] or [SPEED-] key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 11 (These subscreens are not for service use.)

Table 1: Description of VR-recording-related errors

Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error related to MPEG Encoder

Error Message	Description
AVEnc Hang	AVEncoder failed
IN Encode *	Changes cannot be made in the process of encoding
No SysHdr IN	System packet is not input periodically
Stm Start NG	Failure to start encoding (reasons not clear)
Stream NG	Inappropriate input stream data
Strm Start NG	Timeout waiting for system packet input at the beginning

● Error related to Drive system

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description
Bdr Cls NG	Close Border failed
Bdr Opn NG	Open Border failed
BUF Overflow	Overflow of the Stream Buffer
CLS Rzon Fail	Video Mode Close Rzone failure
Drive Hang	The Drive is hung up.
Drv Err	General error of the drive
Drv Hard Err	Abnormality in the drive hardware or firmware
Drv TimeOut	Timeout waiting for drive operation
Fail Repair	Repair failed
Format NG	Format failed
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.
Mech No Res	No response from the mechanical-control computer
MKB Invalid	MKB reading error
NWA Exhaust	NWA surpassed and impossible to use
OPC NG	OPC failed
PCA Full	PCA has been used up.
Read Err	Reading failed, ECC failed, etc.
ReadOnly DISC *	Because some data are invalid, data cannot be written
RMA Full	RMA has been used up.
Rzn Cls NG	Close RZone failed
Rzn Rpr NG	Repair RZone failed
Rzn Rsv NG	Reserve RZone failed
TMP-VMG WrErr	Video Mode TMP VMGI Write Error
VTSI_B Wr Err	Video Mode VTSI BUP Write Error
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)
VTSI Wr Err	Video Mode VTSI Write Error
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)
Write Err	The Drive failed to write and could not be recovered.
May Be PVR	May be +VR disc, but no RSAT
V Final fail	Abnormal process occurred when finalizing Video mode
DLVR trace NG	Close Rzone failed at dual layer disc

RSAT : Reserved Space Allocation Table

● Error related to Dubbing

Error Message	Description
H2D CP SomeNG	Other NG HDD →DVD copy
Mem get NG	Video Mode Copy Memory has not ensured.
Strm TransfNG	Video Mode Copy Stream Transfer NG
Tracon Trn NG	Video Mode Copy Tracon tranfer has not been completed.
VC Cell Max	Maximum number for Video Mode copy Cells exceeded
VC CopyCancel	Video Mode Copy Copy Cancel
VC FlushC NG	Video Mode Copy Flush Cache NG
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed
VC HDD Inf NG	No information on Video Mode Copy HDD
VC HDD Info NG	Format failed
VC Idling NG	Video Mode Copy idling NG
VC Pck Anl NG	Analizing Video Mode Copy Pack failed

● Error related to Dubbing (continued)

Error Message	Description
VC Transf Stp	Video Mode Copy Transfer Stop
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.
VC VOBU SizeE	Video Mode Copy VOBU Size NG
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed
V2H APP FL NG	VR → HDD APP FLG is OFF
V2H Aud Ch NG	VR →HDD Audio Channel NG
V2H Aud Md NG	VR →HDD Audio Mode NG
V2H Aud Stm N	VR →HDD Audio Stream number NG
V2H SRC Prot	VR →HDD copy prohibitted material
V2H Unknown	VR →HDD other NG
V2H VOBU TMNG	VR →HDD Play back time of each VOBU is different
V2H V Reso NG	VR →HDD Video resolution NG
H2D CP NoSpac	HDD →DVD insufficient free space for copy
H2D TO HDDRD	HDD →DVD (VR) TimeOut at HDD playing side
H2D TO SPRO	HDD →DVD (VR) TimeOut at internal processing
H2D TO DVDWR	HDD →DVD (VR) TimeOut at HDD recording side

● Other Errors

Error Message	Description
Abort *	Cancellation
Already open	Extension file is already opened.
BK BATT Down	Backup RAM data has been erased.
BK FSYS Dirty	Backup RAM data has not been wrtten on the File Sys.
BUG	Some bugs
BusReset Done	Bus Reset has been excecuted.
Cell Close NG	Cell Close NG
CPRM IC NG	Inappropriate CPRM IC
Dir Depth Err	Tree of Directory is too deep.
Disc Full	No further data can be written because the disc is full.
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure
DRAM NG	Abnormality in access to the Work DRAM
Drive Destroy	The drive has crashed.
EncModul Hang	Encoder routine is hung up.
F Alrdy Exst	Extension file is already exist.
File cansel	Extension file is canseled.
FileNot Exist	Extension file is not exist.
Format Excec	Formatting has been executed.
Invalid Disc *	The disc cannot be recognized.
Invalid Param *	Invalid parameter
Invalid TMVMG	Invalid TMP_VMGI content
Invalid UDF *	Invalid UDF content
Invalid VMG *	Invalid VMG content
Invalid VTSI	VTSI information of +VR is unusual.
Irr Action *	Incorrect action
MKB REVOKED	Error in gaining data
Limit Over *	Standard maximum limit exceeded
No More Info *	No more space in the internal work-management area
No Permission *	No permission to write to the disc
No Video	No video input (not locked)
Now Busy *	In the process of the emergency processing
NV Pck DMA Er	Inappropriate NaviPack DMA
NV Pck MK Err	Error in creating NaviPack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input
Over Heat	Abnormal temperatute
PARAM NO ACCP	Recording parameter is not matched.
Process Over	Process is overfull.
Protect Src *	Source to be recorded is copy-protected.
Rec Pause *	No operation permitted during recording pause
Relocation Do	VR-recording data was relocated

● Other Errors (continued)

Error Message	Description
Repair Excec	Repairing has been executed.
Something *	Undetermined error
SRAM NG	Abnormality in access to the backup work SRAM
Status NG *	Abnormality in change of statuses
SW PVR	Switch to +VR playback process
SW Vpb mode *	Switching to video playback routine is required.
SW Vrec mode *	Switching to video recording routine is required.
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp
VBR-SRAM NG	Abnormality in VBR SRAM
V Categ ID NG	Inappropriate Category ID
V Cate Inf NG	Inappropriate Category information
V Ext MAX Ovr	Count Max exceeded
V ExtToo Big	The extension file is too large.
V Ext TY NG	Type NG
Virgin DISC	Virgin Disc
VOBU Info NG	Inappropriate VOBU information
WaterMark Det	Watermark detected
WM Cracked	WM Cracked
Param Short	Editting Error (Clear A-B)
Invalid VRMI	Information of +VR is NG. (VRMI)

● Error related to HDD

Error Message	Description
Do nothing	Do nothing for demand.
ESFSYS CORUPT	easyfsys error
ESFSYS INIT	easyfsys initializing
HDD Buff High	High-level process executed for the HDD Buffer
HDD DEF DONE	HDD deflag finished
HDD DEF ERR	HDD deflag error
HDD Destroy	HDD is not recognized on the bus.
HDD INFO BAD	Incorrect HDD Management Data
HDD Initialize	HDD initialized
HDD IRRG POFF	Abnormal power off
HDD MBR NG	Inconsistent MBR data
HDDReset Done	HDD Reset executed
HDD ROMSUM NG	Rom-code check sum NG
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD SMART NG	Inappropriate HDD SMART
HDD Trans Err	DMA error in HDD copy transfer
HDD unauthor	Inconsistent HDD serial No.
HDD Zero WR	MBR was witten
Task No Activ	Task has not been activated.
TT Rec Over	Title recording time full
HDD WRONG TGT	Invalid HDD target No. is directed.
extHDD Ignore	External HDD is dismounted.
HDD PFile NG	Program file installed in HDD is NG.
HDD DEL TT	Delete the title by HDD recovery.
HDD DEL PL	Delete the dubbing list by HDD recovery.
HDD DEL OC TT	Delete the title moving on the way inside HDD

● No Error

Error Message	Description
Non Err *	Normal

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

7.1.6 DV SERVICE MODE

1. DV debug

[Purpose]

To check whether communication between a DV device and the unit is normal when a DV device is connected

[Tools to be used]

Remote control unit for servicing (GGF1381)

- DV device
- DV cable

[How to enter] Press the ESC , DISP then 3 keys, in that order.

[How to quit] Press the ESC key.

[Mode description]

① **(DV/1394) InitDV:**OK **InitVE:**OK **AV**:02 **DV**:01

② [**Recorder**] **GUID:**00E0360006100001 IRM
③ **iPCR**:C03F0000 **oPCR**:0000007A
④ [**DV**] **GUID:**0080880303480E96
⑤ **VN:**VICTOR **MN:**GR-D50K
⑥ **TM:**C3 **TS:**75 **CT:**32 **WP:**01 **PS:**FF **OS**:00
⑦ **CA:**A000002020 **CV:**FF **MD:**VTR
⑧ [**DVdecode:**Yes] **LineSys:**525-60
⑨ **TC:**00h20m35s **RD:**02/02/05 **RT:**10h34m50s
⑩ **ASPECT:**4:3 **CGMS:**000000 **APSTB:**00 **DEC:**525-60
⑪ **SF:**32KHz **QU:**12bit **AMODE:**4) Stereo

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	InitDV	Whether the initialization of UPD72893B(1394 LINK and DV codec IC) has been completed (OK) or not (NG)	If NG is displayed, it is considerd the communication failure to UPD72893B.
	InitVE	Whether the initialization of ADV7172 (Video Encoder for DV specific) has been completed (OK) or not (NG)	If NG is displayed, it is considerd the communication failure to ADV7172.
	AV	Number of AV devices recognizing connection	Identification number of AV devices including D-VHS, Digital Tuner, etc other than DV devices.
	DV	Number of DV devices recognizing connection	If the number does not become 01 even if a DV device is connected, identification of that device fails.
②	GUID	GUID set in ConfigROM of the unit	GUID : Global Unique ID (Specific ID for DV devices) If the unit is ROOT (IRM), IRM is displayed at the side position of GUID display.

No.	Item	Description	Remarks
③	iPCR	iPCR value of the unit	
	oPCR	oPCR value of the unit	
④	GUID	GUID set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. If the connectd DV device is ROOT (IRM), IRM is displayed at the side position of GUID display.
⑤	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.)
⑥	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Write-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑦	CA	Connect AV data obtained from the DV device	Data are displayed only if one DV device is identified.
	CV	Camera/Vtr mode data obtained from the DV device	
	MD	DV device mode	Camera or VTR is displayed only if one DV device is identified.
⑧	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV.
	LineSys	Input Line System setting	
⑨	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when the tape is played in forward direction. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑩	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video)	*CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated.
⑪	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	

2. Simple Diagnosis of DV

Symptoms		Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for DV input	1	DV ①	Check the initDV indication: OK: Initialization of DV related LSI (IC102, IC108) appropriately completed. NG: Initialization of DV related LSI (IC102, IC108) has not been completed properly. Defective communication with DV related LSI (IC102, IC108) and Host u-com (IC1001)	Defective IC102(1394Link & DVcodec)/ IC108(1394PHY), improper connection between IC102 / IC108, defective soldering, defective power supply, etc.
	2	DV ①	Check the number of DV devices when one DV device is connected to the recorder: 01 : The connected DV device is correctly identified. Other than 01 : The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC108(1394PHY), defective cables, an IEEE 1394 device other than the DV device connected.
No picture nor sound for DV input	1	DV ⑧	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC102(1394Link & DVcodec), defective soldering, defective power supply, etc.
	2	DV ⑩	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective source device defective IC102(1394Link & DVcodec), IC108(1394PHY) **Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	1	DV ⑩	Check CGMS:	Recording cannot be performed for a copy-protected source.
No sound for DV input	1	DV ⑪	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.
No picture for DV input	1	DV ①	Check the initVE indication: OK: Initialization of DV specific VideoEncoder (IC101) appropriately completed. NG: Defective communication with DV specific VideoEncoder (IC101) and HOST u-com (IC1001). Initialization of DV specific VideoEncoder (IC101) has not been completed properly.	Defective IC101(DV specific VideoEncoder), defective soldering, defective power supply, etc.

7.1.7 EPG SERVICE MODE

[Purposes]

Reasons for the following malfunctions can be inferred by checking the conditions for obtaining the past EPG data:

① EPG data cannot be obtained.
② Some EPG data obtained are missing.

[Tool to be used]

Remote control unit for servicing
(GGF1381)

[How to enter] • Press the [ESC], [DISP], [7] keys, in that order.

[How to quit] Press the [ESC] key.

[Description of the mode]

1. Summary screen

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  Next Data  Download Time : 14:00
02             Duration     : 01h30m
03  Gemster Data  Fail Count : 00
04
05
06
07  EPG Data Receive Err Summary
08  Date  Start  End   MD  CH  RcvPkt   TotalErr
09  03/31 13:00 13:30 DL  03  001853   000000
10  03/31 09:00 11:00 DL  03  001192   000000
11  03/31 08:00 08:05 HS  --  000645   000000
12  03/31 00:00 00:00           000000   000000
13  03/31 00:00 00:00           000000   000000
14  03/31 00:00 00:00           000000   000000
```

Lines 01-02	The next download starting time for the EPG data is displayed. Next Data Download Time: Starting time Duration: Duration required for acquiring the EPG data
Lines 03	The Gemster EPG data cannot be found. Number times of Host Scan and Schedule Download, DT models only (Always 00 except DT model)
Lines 09-14	The 6 latest error logs when EPG data were received are displayed, with the latest one at the top.

Date	: Month/day when reception started
Start	: Time when reception started
End	: Time when reception ended
MD	: Method for acquiring the EPG data (HS: Host scanning process, DL: Downloading process of the EPG data)
CH	: Data-receiving channel
RcvPkt	: Total number of received packages. A number 999,999 or greater is displayed as "999999."
Total Err	: Total errors during reception. The sum of Hamming Err, Trans Err and InvLine Err numbers indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."

[Tips] In a case where only "HS" is displayed in the MD column of the logs, the host channel has not been found. It is necessary to check the country and postal-code settings in the user settings.

2. Detail screen

[How to enter] Press the DIG/ANA key while the Summary screen is displayed. Up to 6 detail screens (1 to 6) are displayed, one each time the DIG/ANA key is pressed. Each detail screen 1 to 6 corresponds with the EPG reception error logs from the top on the Summary screen.

[How to quit] Press the ESC key.

[Description of the Detail screens]

```
    0         1         2         3         4
    01234567890123456789012345678901234567890123456789
00  (EPG EURO)
01  EPG Data Receive Err Details - 1
02
03  Date : 03/31
04  Start Time : 13:00   END Time  : 13:30
05  Host CH    : 03      P-ON Kind : Download
06
07  Data Receive Part   Total Err  : 000000
08  Pkt Rcv Num  : 001853  Pkt Snd Num : 001853
09  Inv Line Err : 000000
10  Slice Cont : Auto EQ : OFF LV : -h
11
12  Temporary  Buffer  Information
13  Pool  Num   : 000000  Max  Store  : 000000
14  Discard Pkt  : 000000  Use  Num   : 000000
```

Line	Display item	Description	Remarks
Line 01	EPG Data Receive Err Details-X	The rightmost figure represents the number of the current detail screen. This number corresponds to the order of the EPG reception error log from the top.	
Lines 03-05, Reception conditions	Date Start Time END Time Host CH P-ON Kind	: Month/day when reception started : Time when reception started : Time when reception ended : Data-receiving channel : Methods for acquiring the EPG data (host scanning and downloading)	Only during initialization, host scanning is automatically executed to find the host broadcast.
Lines 07-10, details on errors during reception	Total Err	: Total numbers of errors during reception. The total number of Hamming Err, Trans Err and InvLine Err indicated on the Detail screen. A number 999,999 or greater is displayed as "999999."	Total Errors: If the total number of errors reaches two digits or greater, it is likely that EPG data acquisition failed. Display subscreen 1 of the first screen and check the electric field intensity from the AGC level.
	Pkt Rcv Num Pkt Snd Num	: Total number of received packages. A number 999,999 or greater is displayed as "999999." : Total number of packages that were sent to the application program among all the received packages. A number 999,999 or greater is displayed as "999999."	If the total number of received packages is 0, it is likely that the country and postal-code settings are wrong.
	InvLine Err	: Total number of errors that were generated by receiving data from invalid lines. A number 999,999 or greater is displayed as "999999."	
	Slice Cont	: Slice level control Auto-Tu Con, Manual - Syscon.	
	EQ	: Equalizer setting (ON, OFF)	
	LV	: Slice level (10~30 hex) (Only when the slice Cont is Manual.)	

Note: The data on lines 12-14 are for software development, not for service use.

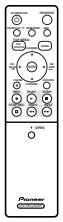
7.1.8 AGING MODE

[Purposes]

If symptoms regarding recording/ playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

[Tools to be used]

Remote control unit for servicing (GGF1381)



Remote control unit supplied with the unit (VXX3129)

Commercially available, recordable DVD-R/+R and DVD-RW/+RW/ -RAM discs

[Notes]

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during initialization: The unit stops after initialization is finished. ← (aging for ±RW/-RAM only)
- If the tray is being opened/closed: The unit stops after the tray is opened/closed. ←

[Description of operation] **Aging for the DVD-RW/DVD-R**

Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Setting of the main unit--Recording--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* *Take catution as the all recorded data of HDD is deleted.*

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

Note:
Indications on the FL display are retained, and this information is also retained as an OSD.

7.1.9 HDD CHECK MODE

How to diagnose failure of the hard disc drive (HDD)

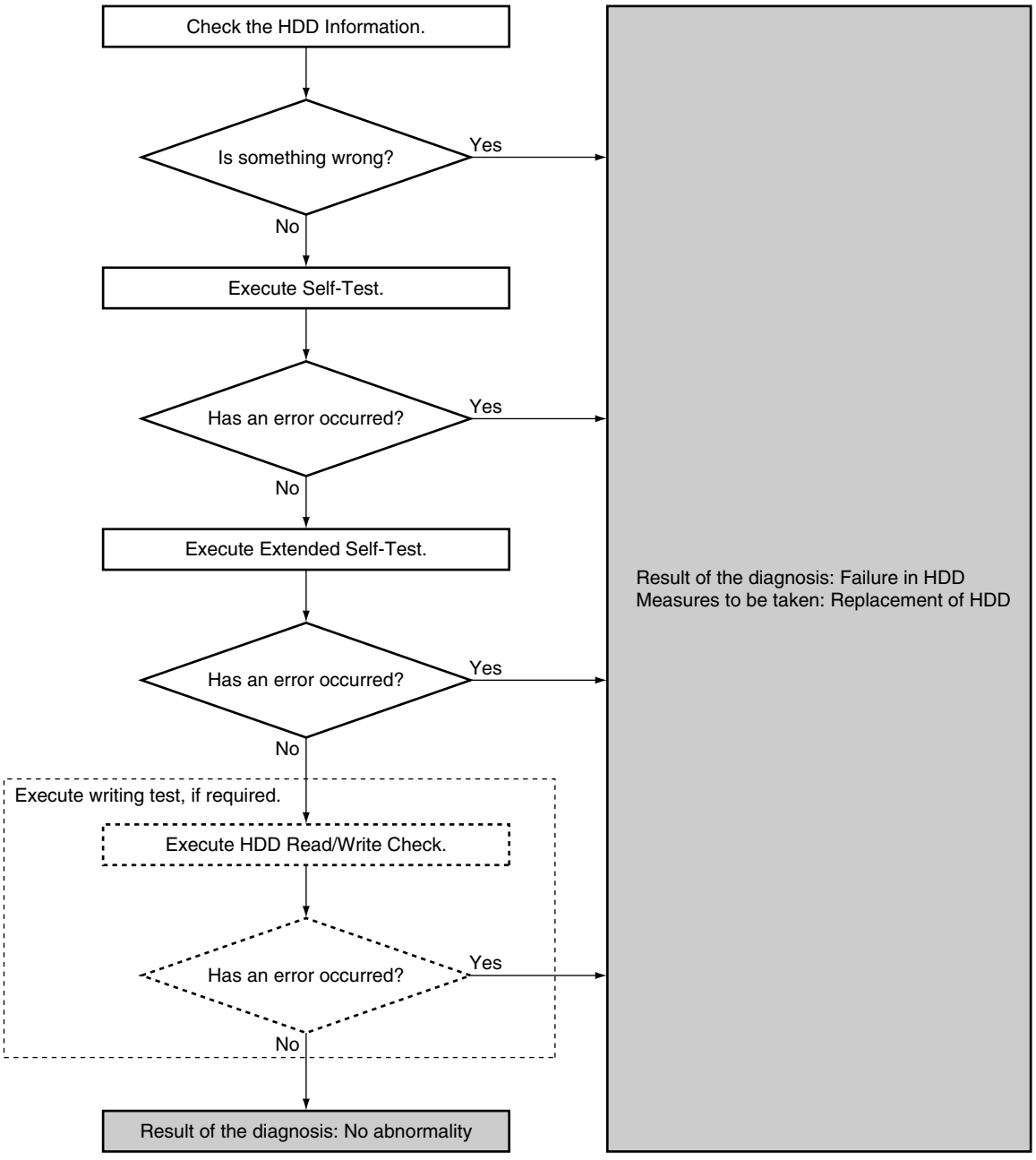
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

1. Flow of HDD diagnosis

(1) Flowchart of HDD diagnosis



(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 60 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 2 hours/160 GB
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 6.4 hours/160 GB

2. How to start or terminate the diagnostic program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.

How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.

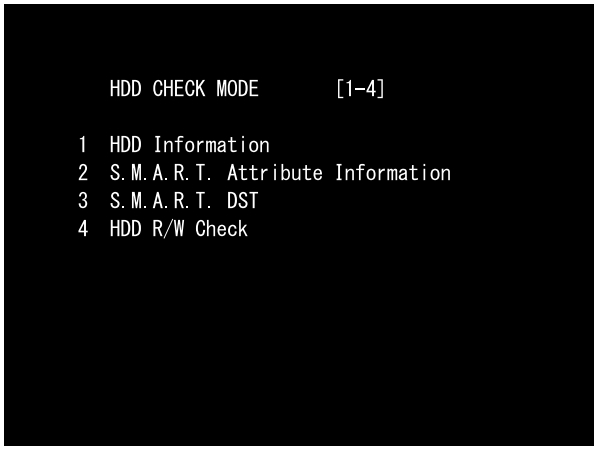
How to terminate: Press the "ESC" key.

Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.

The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

3. Diagnosis procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



Tests to be executed
① HDD Information:
Check of the HDD information
② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data
③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

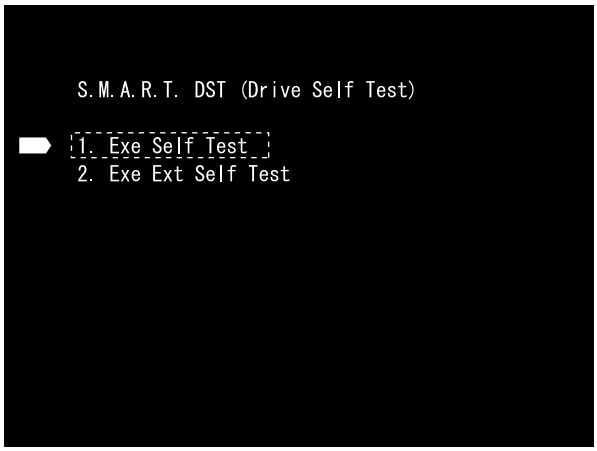
Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

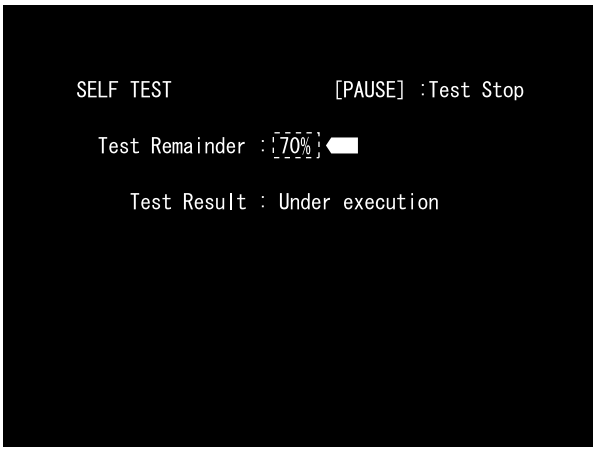
② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?

Detailed description
① Model:
For the correct model name, refer to the display of the unit.
② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.
Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



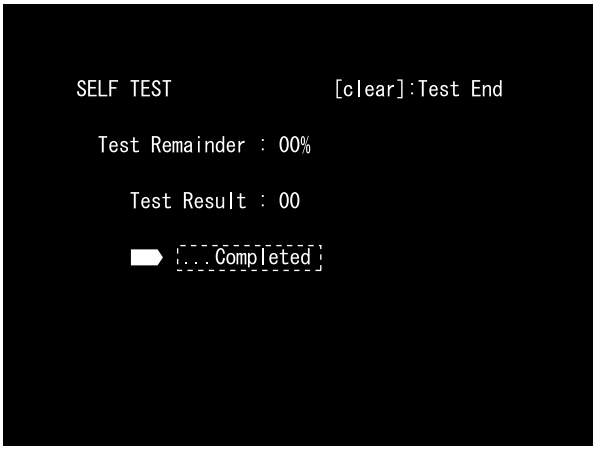


The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

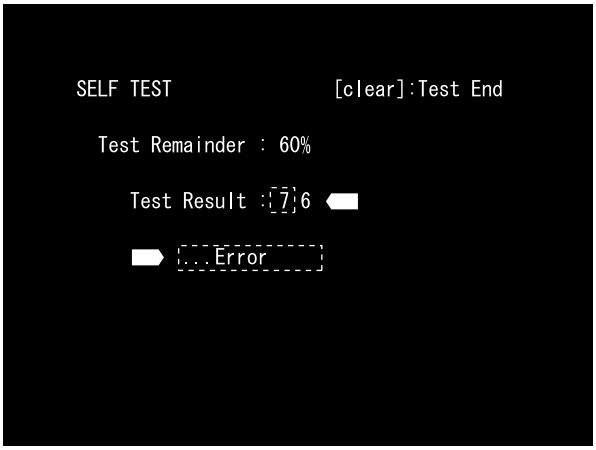
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

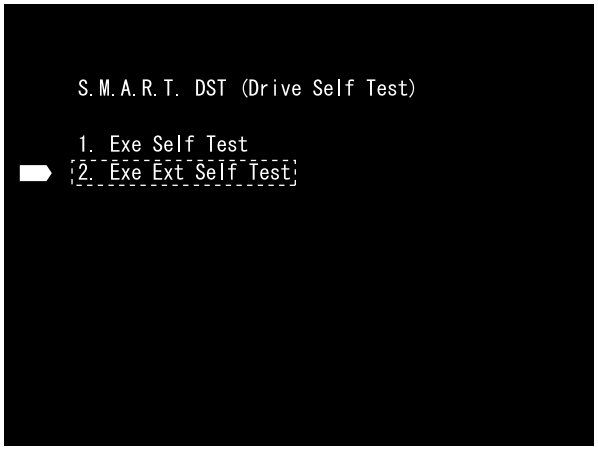


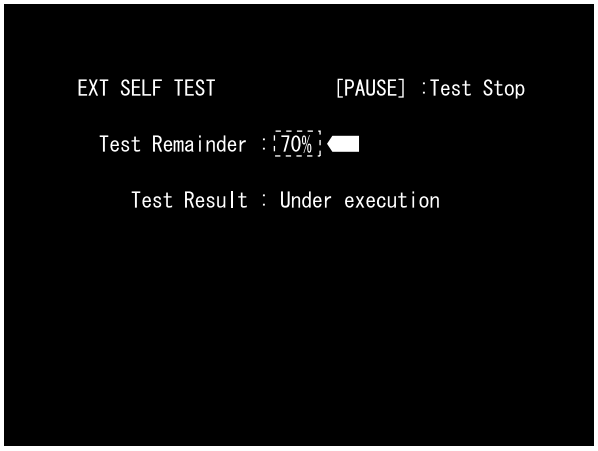
Example: With an error



To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



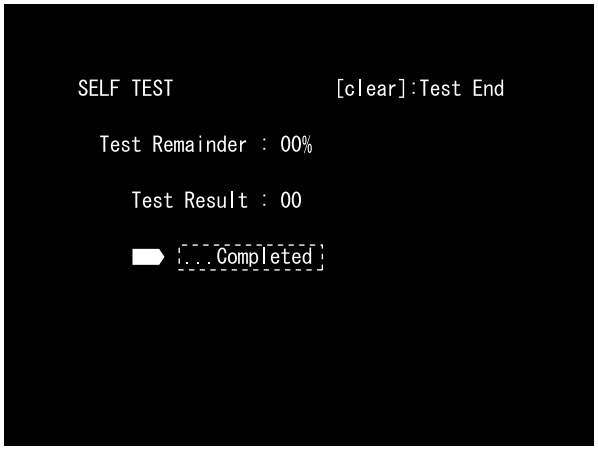


Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

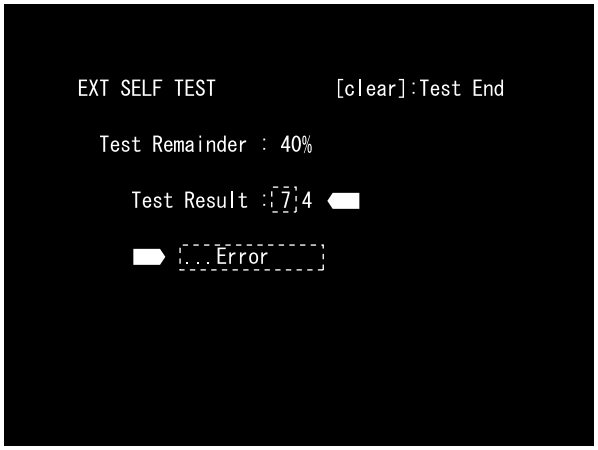
Diagnosis results
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error

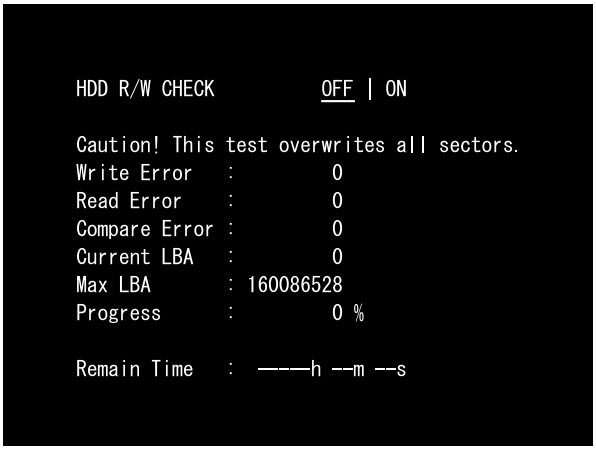


Example: With an error

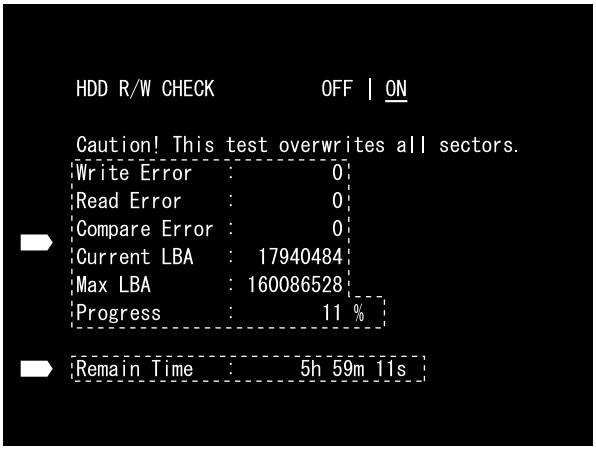


To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.
Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.
To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.


HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 0
Max LBA : 160086528
Progress : 0 %
Remain Time : ----h --m --s

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.

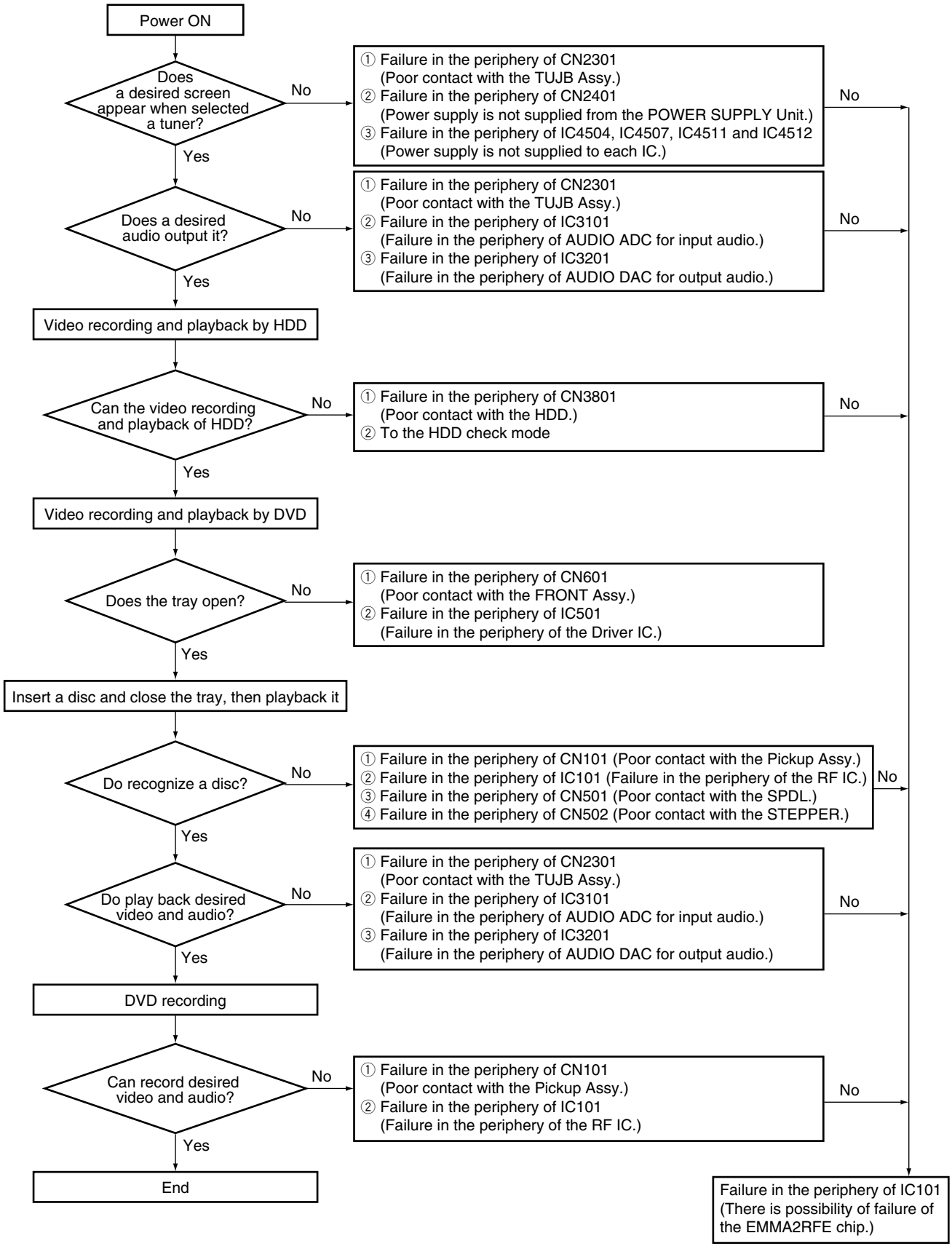

HDD R/W CHECK OFF | ON
Caution! This test overwrites all sectors.
Write Error : 0
Read Error : 0
Compare Error : 0
Current LBA : 17940484
Max LBA : 160086528
Progress : 11 %
Remain Time : 5h 59m 11s

Detailed description on each item on the screen
- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 6.4 hours/160 GB

Diagnosis results
- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

7.1.10 DIAGNOSIS OF THE MAIN ASSY


Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of CN2401 (Power supply is not supplied from the POWER SUPPLY Unit.)
③ Failure in the periphery of IC4504, IC4507, IC4511 and IC4512 (Power supply is not supplied to each IC.)
No
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN3801 (Poor contact with the HDD.)
② To the HDD check mode
No
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of IC101 (Failure in the periphery of the RF IC.)
③ Failure in the periphery of CN501 (Poor contact with the SPDL.)
④ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
No
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TUJB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
DVD recording
Can record desired video and audio?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of IC101 (Failure in the periphery of the RF IC.)
No
Yes
End
Failure in the periphery of IC101 (There is possibility of failure of the EMMA2RFE chip.)

7.1.11 NOTE ON REPLACEMENT OF THE SDRAM

Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by HYNIX, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

- **How to identify the manufacturer**
  Confirm the name of the manufacturer stamped on the surface of the part.

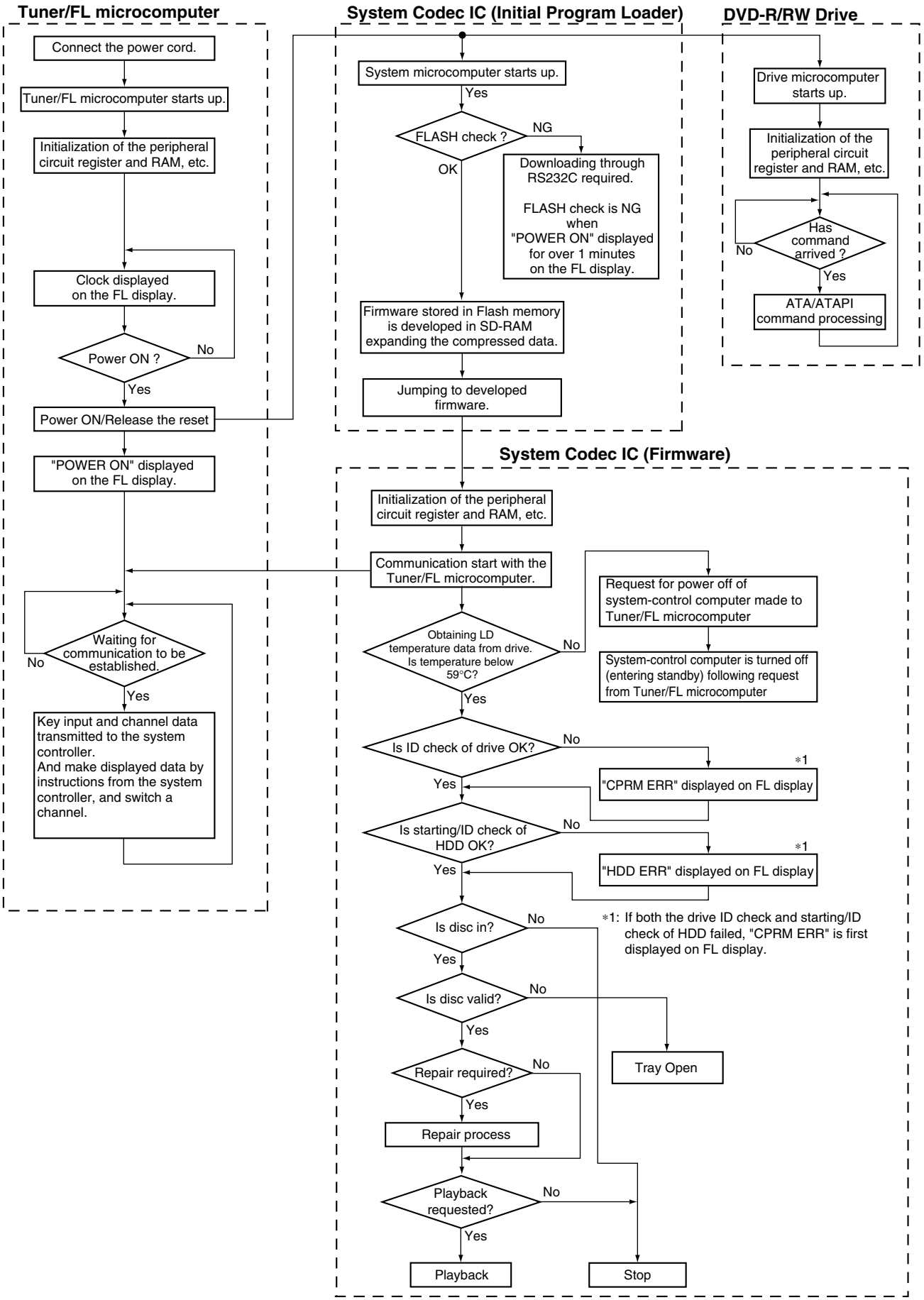
By HYNIX (replacement of both SDRAMs required)

By SAMSUNG (replacement of only the defective SDRAM possible)

- **Measures to be taken**
  ① If the SDRAM that needs replacement was manufactured by HYNIX:
  Replace both IC1201 and IC1221 at the same time.
  ② If the SDRAM that needs replacement was manufactured by SAMSUNG:
  Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

- **Possible malfunctions**
  If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
  ① The power does not come on.
  ② High-speed dubbing disabled
  ③ Other malfunctions related to the SDRAM

7.1.12 SETUP SEQUENCE


Tuner/FL microcomputer
System Codec IC (Initial Program Loader)
DVD-R/RW Drive
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller.
And make displayed data by instructions from the system controller, and switch a channel.
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 59°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
*1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
*1
"HDD ERR" displayed on FL display
Is disc in?
No
Yes
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop
*1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.

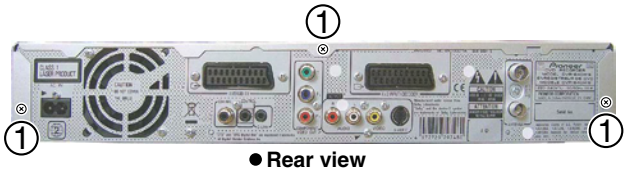
7.1.13 DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.
Note 3: For performing the diagnosis shown below, the following jigs for service is required:
- Emergency disc ejection rod (GGF1529)
- Flexible cable for service (GGD1478), (VKP2291)

Diagnosis

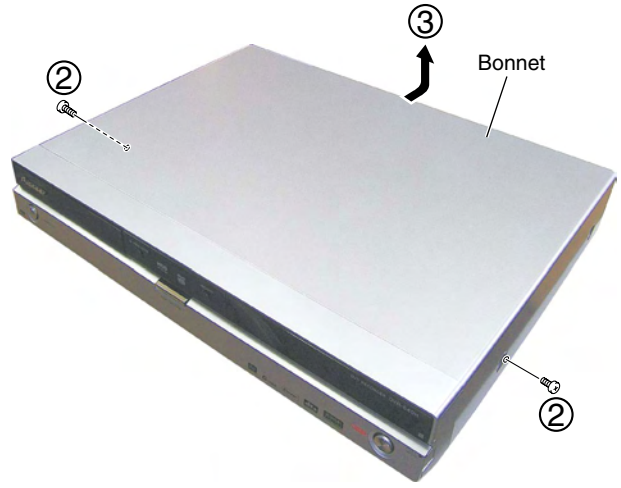
1 Bonnet

① Remove the three screws.



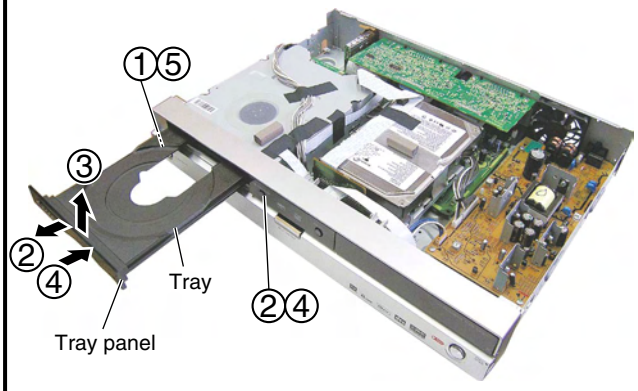
● **Rear view**

② Remove the two screws.
③ Remove the bonnet.



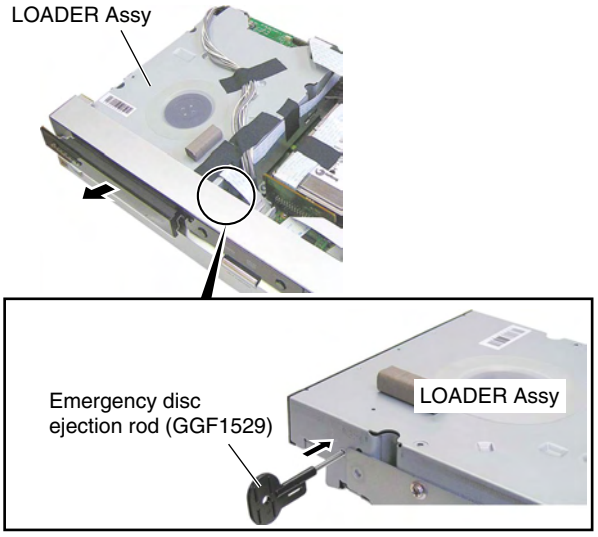
2 Tray Panel

① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ⏏ OPEN/CLOSE button to open the tray.
③ Remove the tray panel.
④ Press the ⏏ OPEN/CLOSE button to close the tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



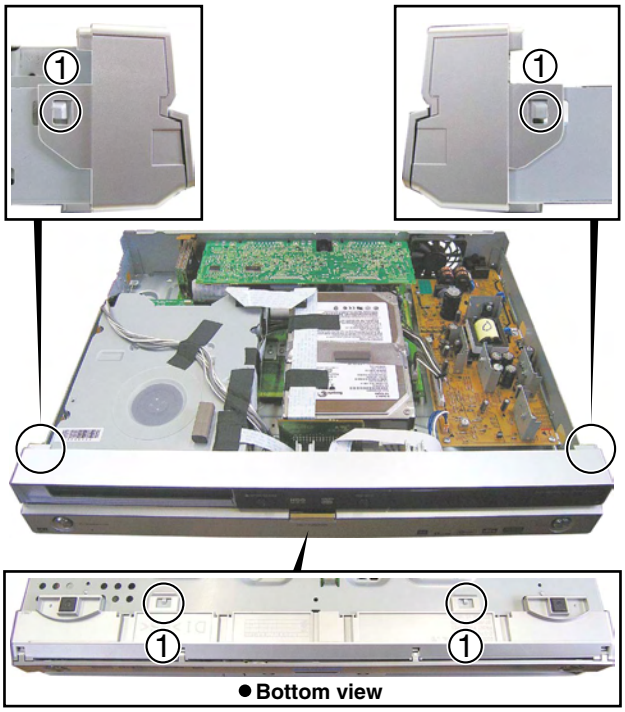
● **How to open the tray when the power cannot be turned on**

When the tray cannot be opened because the power cannot be turned on, it can be opened using the emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)



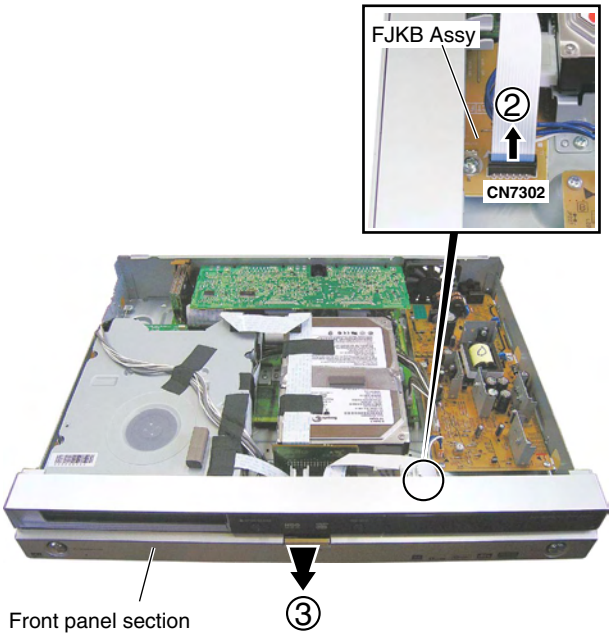
3 Front Panel Section

① Unhook the four hooks.



② Disconnect the one flexible cable.

③ Remove the front panel section.



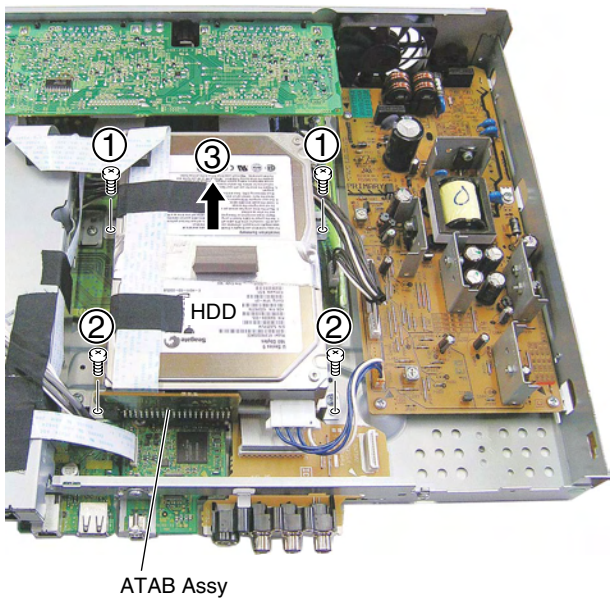
4 HDD and LOADER Assy

● HDD

① Remove the two screws.

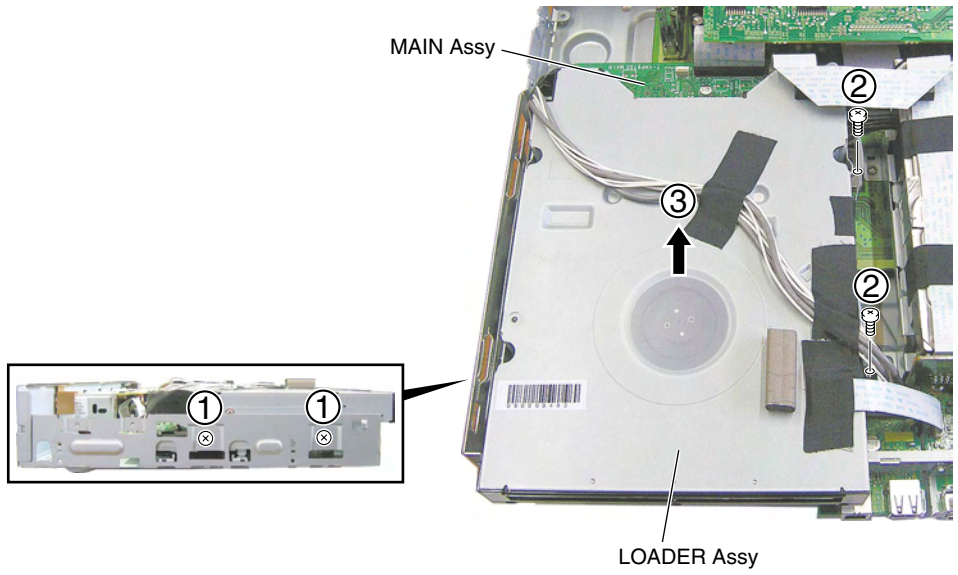
② Remove the two screws.

③ Remove the HDD with the ATAB Assy and the HDD stay. (Disconnect cables, as required.)



• LOADER Assy

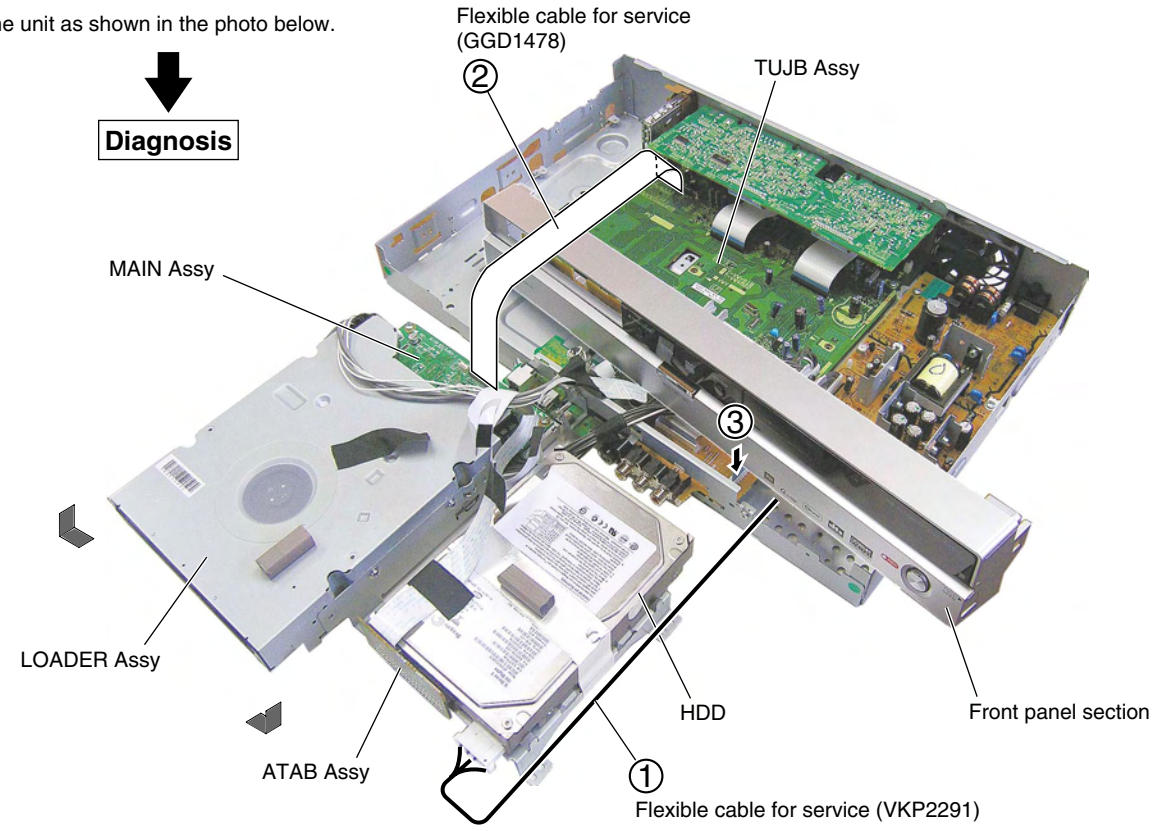
① Remove the two screws.
② Remove the two screws.
③ Remove the LOADER Assy.
(Disconnect cables, as required.)



5 Diagnosis

① Connect the flexible cable for service.
② Connect the flexible cable for service.
③ Reassembling the front panel section.
④ Arrange the unit as shown in the photo below.

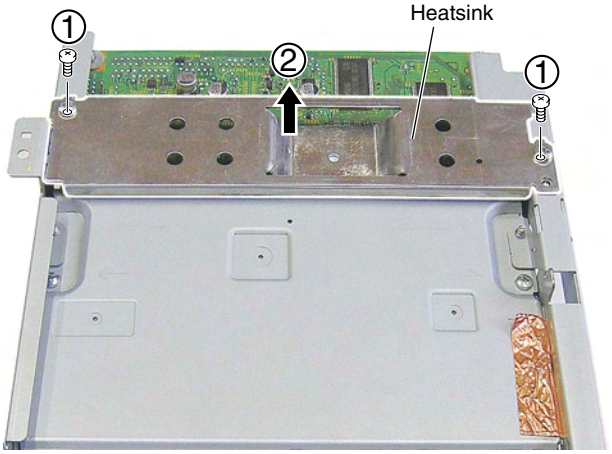
Diagnosis



Access to the MAIN Assy, Cleanning the Pickup Lens

• Heatsink

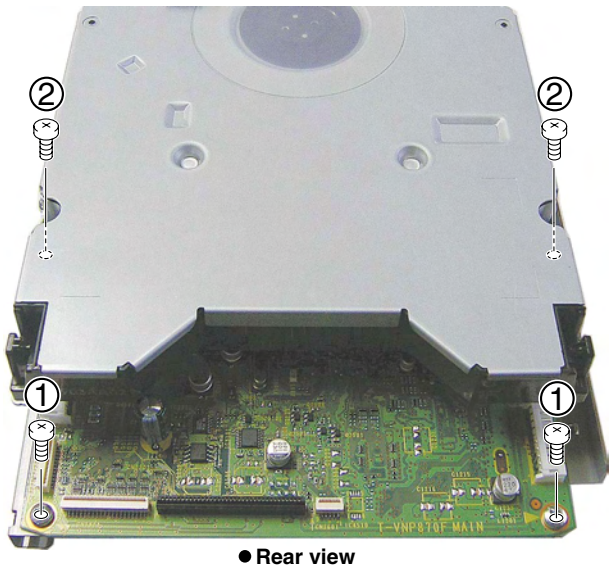
① Remove the two screws.
② Remove the heatsink.



● Bottom view

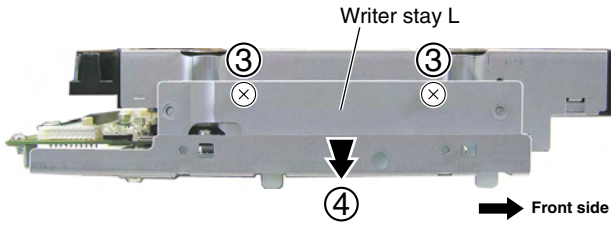
• Writer Stay L and R

① Remove the two screws.
② Remove the two screws.

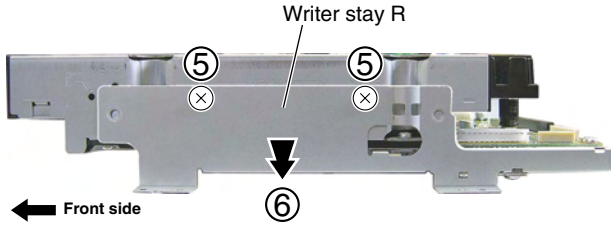


● Rear view

③ Remove the two screws.
④ Remove the writer stay L.



⑤ Remove the two screws.
⑥ Remove the writer stay R.

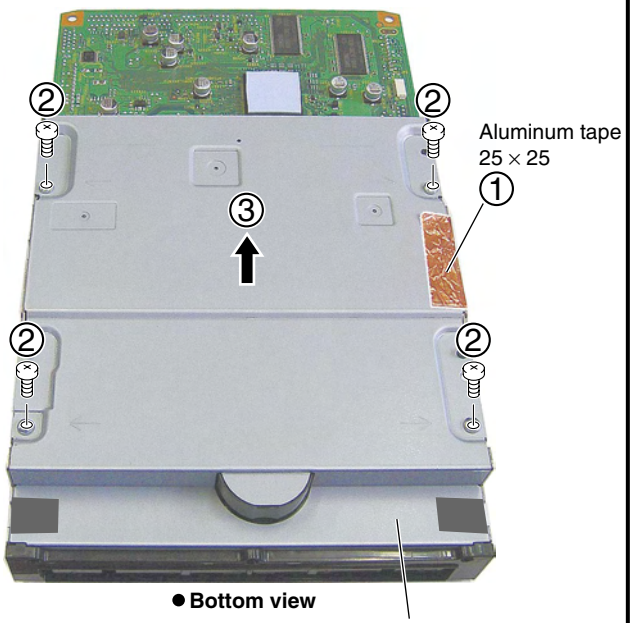


• Low Case U11 and UP Case S

① Remove the aluminum tape 25 × 25.

② Remove the four screws.

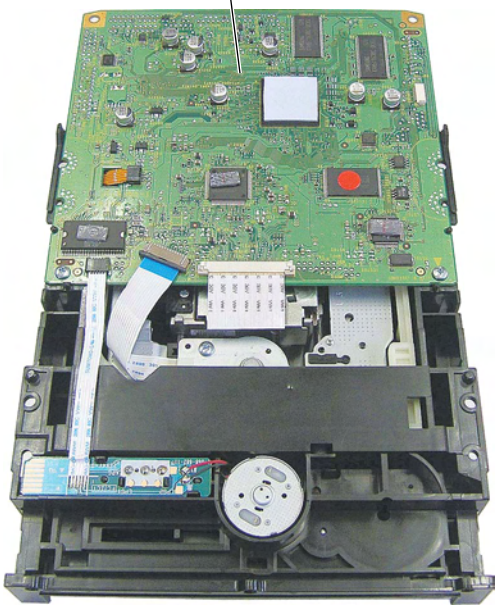
③ Remove the low case U11.



● Bottom view

Low case U11

MAIN Assy



● Bottom view

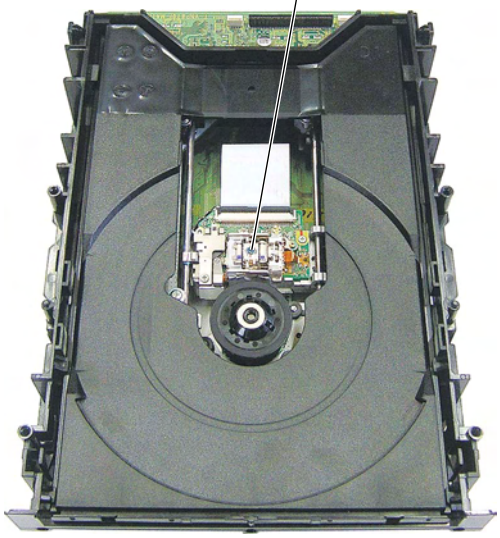
④ Remove the UP case S.

UP case S

Before shipment, be sure to clean the pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008

Pickup lens



7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● **List of IC**

PMC006A8, UPD61272F1-107KA3A, PCA9557PW, TDOTG242-0F0C8, UPD72893BF1-FN3, BH7236AF

■ PMC006A8 (TUJB ASSY : IC101)

• TUNER Microcomputer

● **Pin Function**

No.	Mark	Pin Name	I/O	Pin Function
1	PA3/SO8	FLDATA	O	Communication line with FL driver From tuner controller to FL driver
2	PA4/SI8/SB8	FLSTB	O	Communication strobe signal with FL driver
3	PA5/SCK8	FLCLK	O	Communication clock with FL driver
4	P70/INT0/T0LCP	WDT	I	WDT for microcomputer runaway detection RC is external connection. H: Forced reset
5	P71/INT1/T0HCP	ACDET	I	Existence detection of AC power Level interrupt
6	P72/INT2/T0IN/T0LCP	HS_MTOT	I	System controller communication handshake From system controller to Tuner controller
7	P73/INT3/T0IN/T0HCP	IR	I	Pulse input of the remote control unit
8	RES#	XTRESET	I	Reset input
9	XT1	XT1	I	Sub clock connection 32.768kHz
10	XT2	XT2	O	Sub clock connection
11	VSS1	GND	–	Ground
12	CF1	CF1	I	Main clock connection 15MHz
13	CF2	CF2	O	Main clock connection
14	VDD1	VDD1	–	Power supply
15	P80/AN0	MODEL1	AI	Input 1 for destination judgment
16	P81/AN1	MODEL2	AI	Input 2 for destination judgment
17	P82/AN2	KEY1	AI	Main unit key input 1
18	P83/AN3	KEY2	AI	Main unit key input 2
19	P84/AN4	KEY3	AI	Main unit key input 3
20	P85/AN5	AGC	AI	AGC voltage input from the tuner For simple check
21	P86/AN6	BATTERY	AI	Input for battery voltage check Can measure only during 5V operation
22	P87/AN7	FUNC	AI	SCART Function signal input
23	P10/SO0	SDET3	I	Plug detection of S terminal 3
24	P11/SI0/SB0	SDET2	I	Plug detection of S terminal 2
25	P12/SCK0	SDET1	I	Plug detection of S terminal 1
26	P13/SO1	AVLOUT	O	NexTViewLink output signal Negative logic Reverse on the SCART terminal
27	P14/SI1/SB1	SDA	O/D	IIC communication (data)
28	P15/SCK1	SCL	O/D	IIC communication (clock)
29	P16/T1PWML	XSYSRST	O	IC reset signal of whole system
30	P17/T1PWMH/BUZ	TUDET	I	The old and the new distinction of the tuner pack L: New tuner, H: Old tuner
31	PE0/AN12	MUTEV	O	CVBS for video driver IC and Y/C mute signal L: Mute, H: Release Fix to L because mute does not control.
32	PE1/AN13	IRB_EN	I	IR blaster function valid selection Open: IR blaster invalidity, GND: IR blaster is valid
33	PE2/AN14	AMUTE2	O	Audio mute signal of output stage Negative logic H: Release, L: Mute
34	PE3/AN15	SELV1	O	Input switch of video selector INSEL 1 of LA73031
35	PE4	SELV2	O	Input switch of video selector INSEL 2 of LA73031
36	PE5	SELV3	O	Input switch of video selector INSEL 3 of LA73031
37	PE6	YVSEL	O	CVBS or Y/C switch of video selector YOUT-SEL of LA73031
38	PE7	SWSTBY	O	Standby mode switch of video selector Fix to L output because the standby mode is not used.
39	VSS4	GND	–	Ground
40	VDD4	VDD4	–	Power supply

No.	Mark	Pin Name	I/O	Pin Function
41	PF0	LET/FUNC_ON	O	Letter-box output superimposed signal Function output signal for Europe model
42	PF1	SQU	O	Squeeze output superimposed signal
43	PF2	CONDET	I	Electric discharge detection of capacitor for power supply backup Readout after cold-start immediately. If it was L, reduce the voltage.
44	PF3	S1	O	S1/S2 switching signal
45	PF4/IRP	IROUT	O	Pulse output for IR blaster
46	PF5	P_SAVE2	O	Power save mode switch of HA118326
47	PF6	PSMUTE	O	Audio mute control of SCART
48	PF7	XAVLTH	O	Through switch of AV.Link communication line
49	SI2P0/SO2	SO2	O	SIO2 transmission Not used.
50	SI2P1/SI2/SB2	SI2	O	SIO2 reception Not used.
51	SI2P2/SCK2	SCK2	O	SIO2 communication clock Not used.
52	SI2P3/SCK20	RFTHRU	O	RF through switch of the tuner Control with the main unit setting during standby.
53	PWM1	NC	O	Non connection
54	PWM0	FANCTRL	O	Radiation of heat fan rotating speed control H: Top speed, L: Stop Intermediate speed realizes by PWM
55	VDD2	VDD2	–	Power supply
56	VSS2	GND	–	Ground
57	P00	P_CONT2	O	Power supply control of the main board For controlling 2.5V and 3.3V
58	P01	MUTECTL	O	Mute invalidity control Port to suppress last stage mute
59	P02	EPGEXT	O	Equalizer switch of slicer input video
60	P03	TUON	O	Power supply control of the tuner section There is a case to turn on the power during standby independently.
61	P04	SWVION	O	Power supply control of Japan/North America video system Non connection in Europe and General
62	P05/CKO	P_CONT	O	Power supply control of the whole system
63	P06/T6O	FLPON	O	Power supply control of the FL tube
64	P07/T7O	XP_SAVE	O	Power supply control of Europe video system Set to SWVION on the source.
65	P20/INT4/T1IN/T0LCP/T0HCP/INT6/T0LCP1/SSGI0	STATCHG	I	Multiplex status change detection of MSP D_CTR_I/O_1 of MSP
66	P21/INT4/T1IN/T0LCP/T0HCP	J_CLOCK	I	Input audio for Just Clock Pulse input of the tuner audio
67	P22/INT4/T1IN/T0LCP/T0HCP/HCTR	CSYNCIN	I	C-Sync for Auto-Rec
68	P23/INT4/T1IN/T0LCP/T0HCP	XCHECKER	I	Unit checker mounting distinction
69	P24/INT5/T1IN/T0LCP/T0HCP/INT7/T0HCP1/SSGI1	MRST	I	Main board power failure detection Edge interrupt
70	P25/INT5/T1IN/T0LCP/T0HCP	AVLIN	I	NexTViewLink input line
71	P26/INT5/T1IN/T0LCP/T0HCP	X525P	I	525P output signal from the system controller Not used.
72	P27/INT5/T1IN/T0LCP/T0HCP	BLANKIN	I	BLANK signal input of the SCART
73	P30/PWM4	NC	O	Non connection
74	P31/PWM5	TU_DCCON	O	DC/DC converter For +32V generation 200kHz, 2(H): PWM output of 1 (L)
75	P32/UTX1	TXD1	O	Transmission for RS-232C terminal
76	P33/URX1	RXD1	I	Reception for RS-232C terminal
77	P34/UTX2	TXD2	O	UART2 transmission Not used.
78	P35/URX2	RXD2	O	UART2 reception Not used.
79	P36	HS_TTOM	O	System controller communication handshake From tuner controller to system controller
80	VDDODA	VDDODA	–	Power supply

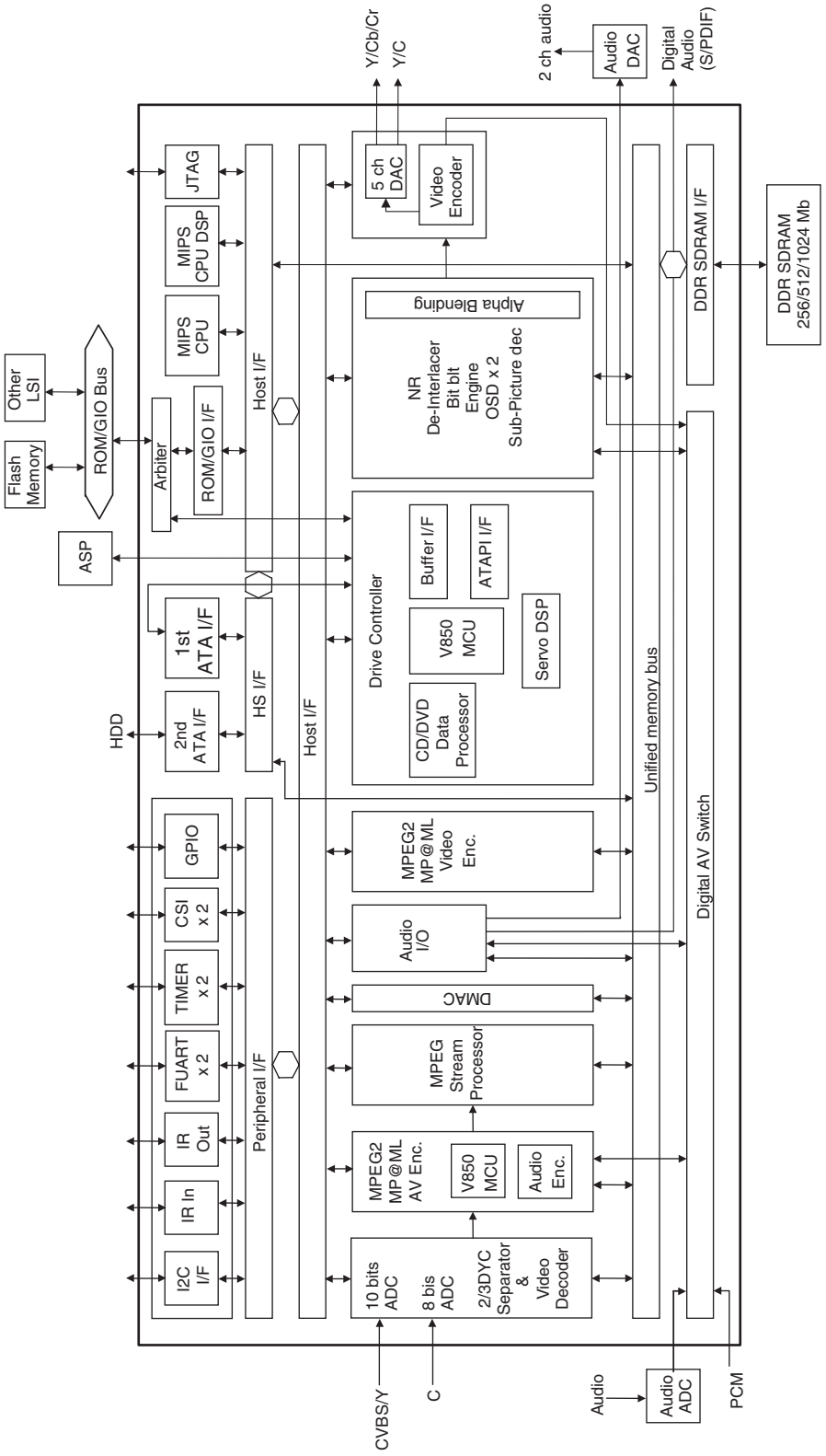
No.	Mark	Pin Name	I/O	Pin Function
81	PB6/CVD/CSYNC	CVBSIN	I	Input video for data slicer 1.0Vpp
82	VSSVCO	GND	–	Ground
83	PB4/FILTSLC	FILTSLC	I	External filter for slicer PLL
84	VDDVCO	VDDVCO	–	Power supply
85	PB2	NC	O	Non connection
86	PB1	NC	O	Non connection
87	PB0/DS1FLD	NC	O	Non connection
88	VSS3	GND	–	Ground
89	VDD3	VDD3	–	Power supply
90	PC7/DBGP2	DBGP2	O/D	Control port for on-chip debugger
91	PC6/DBGP1	DBGP1	O/D	Control port for on-chip debugger
92	PC5/DBGP0	DBGP0	O/D	Control port for on-chip debugger
93	PC4/AN11	C/N	AI	C/N detection of BS-IF
94	PC3/AN10	BS15IN	I	Antenna power supply detection of the BS-OUT terminal There is power supply with L. There is no power supply with H
95	PC2/AN9	BS15SRT	I	Antenna power supply short-circuit detection of the BS-IN terminal L: Short-circuit, H: Normal
96	PC1/AN8	BS15ON	O	Antenna power supply control to the BS-IN terminal L: Power OFF, H: Power ON
97	PC0/OCSYNC	P_SAVEBS	O	BS RF through control L: Not through, H: Through
98	PA0/SO7	SD_TTOM	O	System controller communication data line From tuner controller to system controller
99	PA1/SI7/SB7	SD_MTOT	I	System controller communication data line From system controller to tuner controller
100	PA2/SCK7	SCK_MTOT	I	System controller communication clock From system controller to tuner controller

■ UPD61272F1-107KA3A (MAIN ASSY : IC1001)

(EMMA2RFE)

• DVDR IC

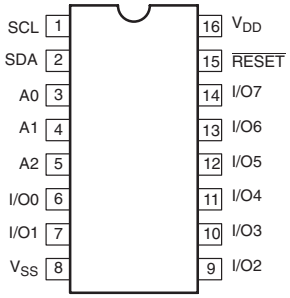
● BLOCK DIAGRAM



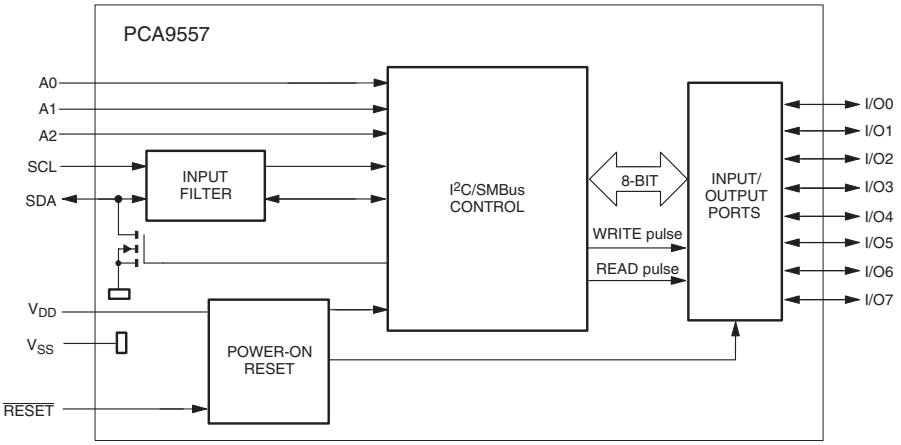
■ PCA9557PW (MAIN ASSY : IC3802)

• 8Bit IIC to PARA IC

● PIN LAYOUT



● BLOCK DIAGRAM



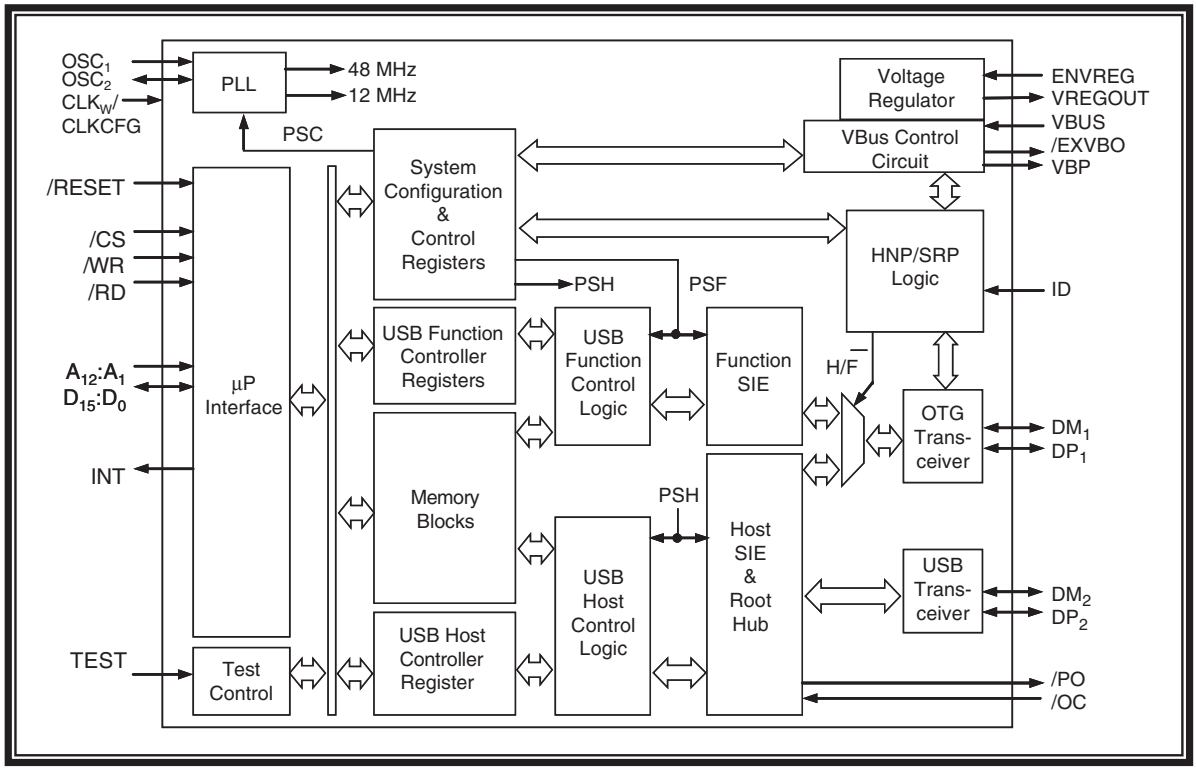
● PIN FUNCTION

Pin No.	Name	Function
1	SCL	Serial clock line
2	SDA	Serial data line
3	A0	Address input 0
4	A1	Address input 1
5	A2	Address input 2
6	I/O0	I/O0 (open drain)
7	I/O1	I/O1
8	V_{SS}	Supply ground
9±14	I/O2±I/O7	I/O2 to I/O7
15	$\overline{RESET}$	Active-LOW reset input
16	V_{DD}	Supply voltage

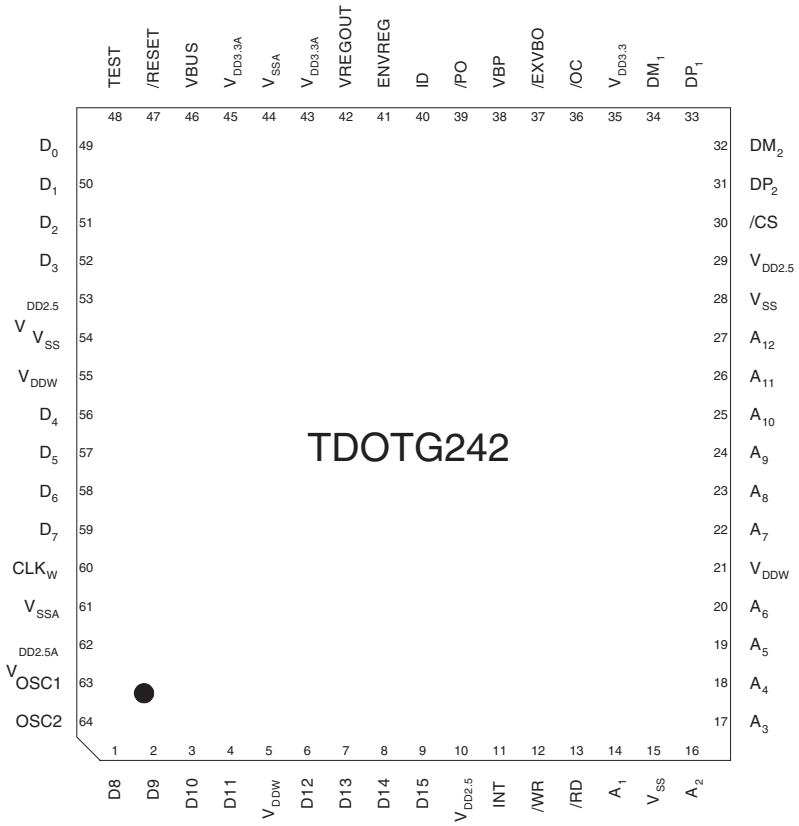
■ TDOTG242-0F0C8 (MAIN ASSY : IC5701)

• USB Controller IC

● BLOCK DIAGRAM



● PIN LAYOUT



● PIN NAME

1	D_8	17	A_3	33	DP_1	49	D_0
2	D_9	18	A_4	34	DM_1	50	D_1
3	D_{10}	19	A_5	35	$V_{DD3.3}$	51	D_2
4	D_{11}	20	A_6	36	/OC	52	D_3
5	V_{DDW}	21	V_{DDW}	37	/EXVBO	53	$V_{DD2.5}$
6	D_{12}	22	A_7	38	VBP	54	V_{SS}
7	D_{13}	23	A_8	39	/PO	55	V_{DDW}
8	D_{14}	24	A_9	40	ID	56	D_4
9	D_{15}	25	A_{10}	41	ENVREG	57	D_5
10	$V_{DD2.5}$	26	A_{11}	42	VREGOUT	58	D_6
11	INT	27	A_{12}	43	$V_{DD3.3A}$	59	D_7
12	/WR	28	Vss	44	V_{SSA}	60	CLK_W
13	/RD	29	$V_{DD2.5}$	45	$V_{DD3.3A}$	61	V_{SSA}
14	A_1	30	/CS	46	VBUS	62	$V_{DD2.5A}$
15	V_{SS}	31	DP_2	47	/RESET	63	OSC_1
16	A_2	32	DM_2	48	TEST	64	OSC_2

OTG242LP pin assignment for the 64-pin LQFP

● **PIN FUNCTION**

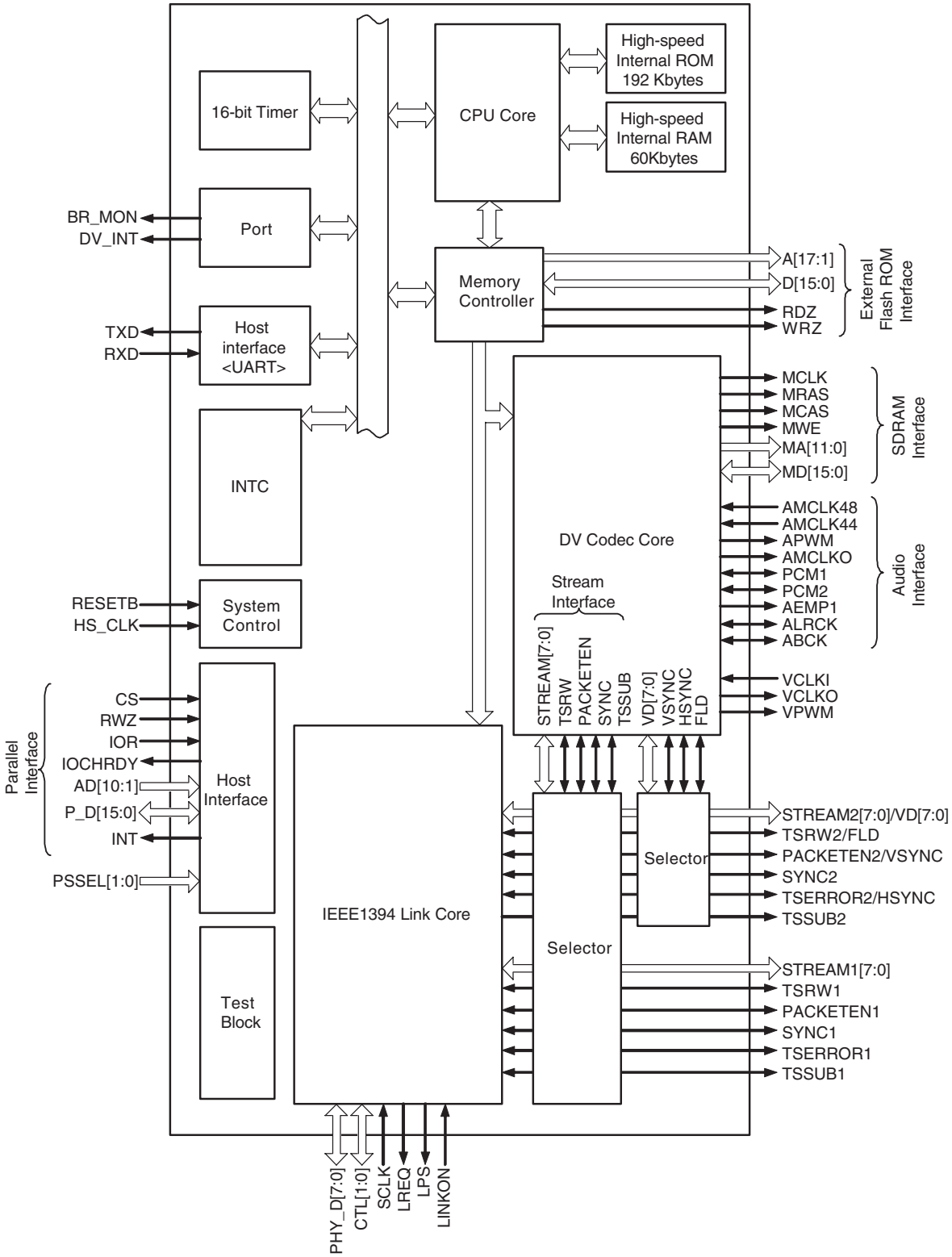
Pin/Signal Name	Signal Type	Active Level	Pin/Signal Description
OSC_1	I		Terminal for OSC.
OSC_2	IO		
/RESET	I	L	Hardware reset.
/CS	I	L	Chip select.
/WR	I	L	Write strobe.
/RD	I	L	Read strobe.
A_{12}:A_1	I		Address bus for an addressing space of 8K bytes.
D_{15}:D_0	IO		16-bit data bus.
TEST	I	H	Factory test mode.
/EXVBO	O	L	Turn on/off the external V_{BUS} (5V) for OTG operation (1: V_{BUS} off; 0: V_{BUS} on).
/PO	O	L	Turn on/off the gang power for all Host ports.
/OC	I	L	Over current condition indicator for gang powered Host ports.
INT1	O/WO	PL	Interrupt to the MCU.
ID	I		Connected to the ID pin of the mini-AB connector (Port 1) for OTG applications.
DM_1, DP_1	IO		Data lines for Port 1, which may serve as a USB Host, or OTG port.

Pin/Signal Name	Signal Type	Active Level	Pin/Signal Description
DM_2, DP_2	IO		Data lines for Port 2, a dedicated USB Host port.
VBUS	I		V_{BUS} input sampled during HNP/SRP operations by the OTG port.
VBP	IO	H	V_{BUS} pulsing control. This pin is used only when Port 1 is an OTG port for a B-DEVICE.
CLK_W	I		This pin is available only in the QFP package
CLKCFG	I		This pin is available only in the BGA package
ENVREG	I		Enables the internal Voltage Regulator if asserted.
VREGOUT	PW		Internal Voltage Regulator output of 2.5V
$V_{DD3.3A}$	PW		Analog +3.3V
$V_{DD2.5A}$	PW		Analog +2.5V
V_{SSA}	PW		Analog ground.
$V_{DD2.5}$	PW		Digital +2.5V
V_{DDW}	PW		Wide-range IO +3.3V or +2.5V.
V_{SS}	PW		Digital/Wide-range IO ground.
NC	PS		No connection. These pins should be left floating.

■ UPD72893BF1-FN3 (DVJB ASSY : IC102)

• DV-CODEC IC

● BLOCK DIAGRAM



● PIN LAYOUT

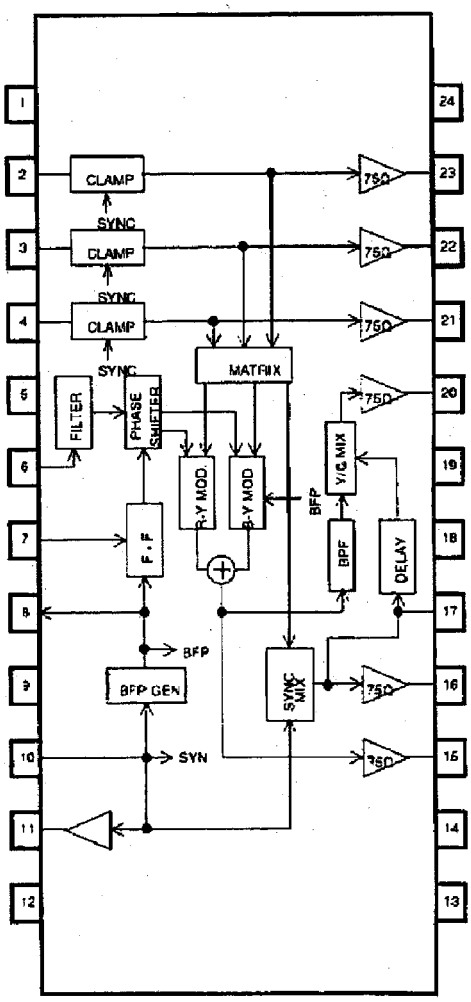
• 208-pin plastic FBGA (15x15)

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U
17	A3	A2	A1	IC(PL)	3.3GND	2.5GND	3.3VDD	P_D9	P_D5	P_D2	INT	IOR	AD10	AD6	AD4	AD2	PSSEL1
16	A5	A4	BR_MON	IC(PH)	IC(PH)	P_D15	P_D12	P_D8	3.3GND	3.3VDD	IOCHRDY	RWZ	AD9	AD5	AD3	AD1	PSSEL0
15	A7	A6	IC (PL)	RXD	IC(PH)	P_D14	P_D11	P_D7	P_D4	P_D1	IC(O)	2.5VDD	AD8	AMCLKO	APWM	AMCLK44	AMCLK48
14	A9	A8	DV_INT	TXD	IC(PH)	P_D13	P_D10	P_D6	P_D3	P_D0	IC(H)	CS	AD7	PCM2	AEMP1	3.3GND	IC(O)
13	A12	A11	3.3VDD	A10										ALRCK	ABCK	3.3VDD	PCM1
12	A15	A14	2.5VDD	A13										MA9	MA10	2.5GND	MA11
11	RDZ	A17	A16	3.3GND										MA5	MA6	MA7	MA8
10	D2	D1	D0	WRZ										MA2	3.3GND	MA3	MA4
9	D6	D5	D4	D3										MCLK	3.3VDD	MA0	MA1
8	3.3GND	3.3VDD	D8	D7										MD15	MWE	MCAS	MRAS
7	D12	D11	D10	D9										MD11	MD12	MD13	MD14
6	D15	2.5GND	D14	D13										MD9	MD10	2.5VDD	3.3GND
5	PLLAGND	PLLAVDD	PLLDVDD	IC(L)										MD6	MD7	3.3VDD	MD8
4	HS_CLK	PLLDGND	RESETB	3.3VDD	3.3GND	CTL0	LPS	STREAM12	STREAM16	TSRW1	PACKETEN2/ VSYNC	SYNC2	STREAM21/ VD1	STREAM25/ VD5	AFS2	MD4	MD5
3	IC (PL)	IC (L)	PHY_D7	PHY_D4	PHY_D1	2.5VDD	LINKON	STREAM13	STREAM17	SYNC1	TSERROR2/ HSYNC	TSSUB2	STREAM22/ VD2	STREAM26/ VD6	VCLKI	MD2	MD3
2	IC (L)	IC (L)	PHY_D6	PHY_D3	PHY_D0	SCLK	STREAM10	STREAM14	PACKETEN1	3.3VDD	3.3GND	2.5GND	STREAM23/ VD3	STREAM27/ VD7	VCLKO	MD1	3.3GND
1	IC (H)	IC (L)	PHY_D5	PHY_D2	CTL1	LREQ	STREAM11	STREAM15T	SERROR1	TSSUB1	TSRW2/ FLD	STREAM20/ VD0	STREAM24/ VD4	AFS13	3.3VDD	VPWM	MD0

■ BH7236AF (SCRB ASSY : IC2000)

• Color TV Signal Encoder

● BLOCK DIAGRAM



● PIN FUNCTION

Terminal No.	Terminal name	Description of terminals	Termina No.	Terminal name	Description of terminals
1	GND1	Ground terminal except 75Ω driver	13	N.C.	No Connection
2	RIN	Analog Red signal input terminal.	14	N.C.	No Connection
3	GIN	Analog Green signal input terminal.	15	COUT	Chroma signal output terminal.
4	BIN	Analog Blue signal input terminal.	16	YOUT	Luminance signal output terminal.
5	N.C.	No Connection	17	YTRAP	Luminance trap filter terminal.
6	SCIN	Color subcarrier input terminal.	18	N.C.	No Connection
7	NT/PAL	Input terminal for the selection of TV format.	19	VCC2	Power supply terminal for 75Ω driver.
8	BFPOUT	Burst timing signal output terminal.	20	VOUT	Composite video output terminal.
9	N.C.	No Connection	21	BOUT	Analog B signal output terminal.
10	SYNCIN	Composite sync input terminal.	22	GOUT	Analog G signal output terminal.
11	SYNCOUT	Composite sync output terminal.	23	ROUT	Analog R signal output terminal.
12	VCC1	Power supply terminal except 75Ω driver.	24	GND2	Ground terminal for 75Ω driver

7.3 CAUTIONS ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During nonoperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 15°C/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
  If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

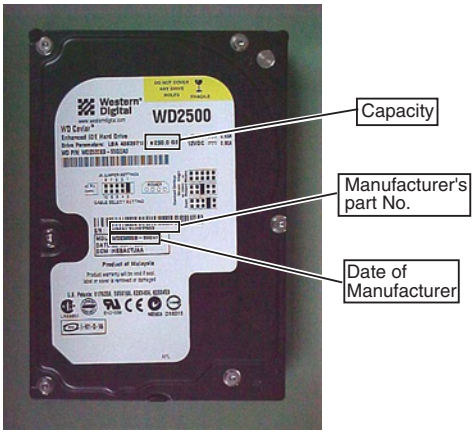
■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

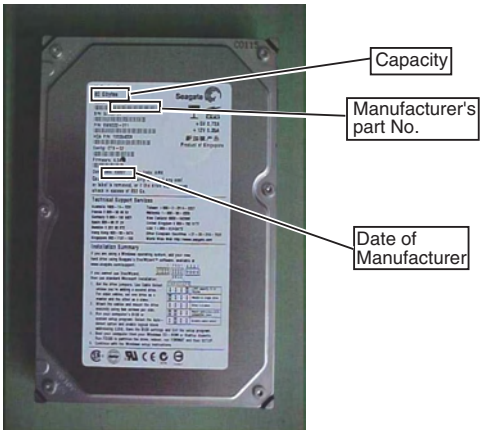
Model Name	Capacity	Western Digital		SEAGATE	
		Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-540H-S DVR-640H-AV	160GB	VXF1068	WD1600BB -xxGUCx	VXF1086	ST3160022ACE

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

Western Digital(160GB)

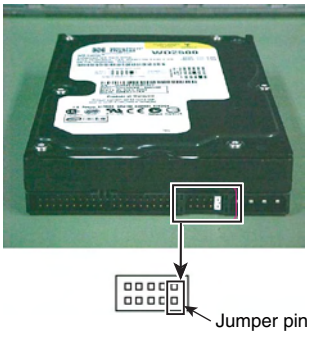


Seagate(160G)



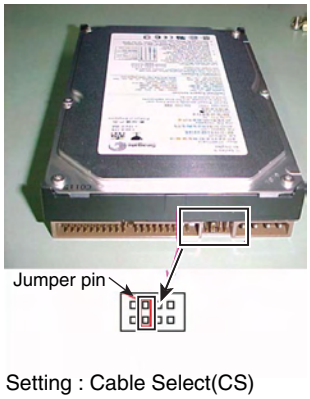
■ Confirmation of the jumper pin location of the HDD

Western Digital



Setting : Cable Select(CS)

Seagate



Setting : Cable Select(CS)

7.4 DISC/CONTENT FORMAT

	HDD	DVD-R		DVD-RW		DVD+R	DVD +RW	DVD-RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video)	DVD (VR) *1	DVD (Video) *2	DVD+R	DVD+RW	DVD-RAM *13, 16
Logos	HDD HARD DISK DRIVE	DVD R		DVD RW	DVD RW RW 2	RW DVD+R	RW DVD+ReWritable RW DVD+ReWritable	DVD RAM
Re-recordable / Erasable	●	● *3	● *3	●	●	*3	● *14	●
Editing of recorded programs	●	●	● *4	●	● *4	● *4	● *4	●
Recording of Copy-once protected material	●	● *12		● *12				● *12
Playback in other players/recorders	n/a	*5	● *6	● *7	● *6	● *6, 15	● *8	● *9
Chase play	●							
16:9 and 4:3 program recording	●	●		●				●
Bilingual broadcast recording of both audio channels	● *10, 11	● *11		● *11				● *11

Notes to table

**1 Must be initialized for VR mode recording*
**2 Must be initialized for Video mode recording*
**3 Erasable, but free space does not increase*
**4 Cannot erase sections, edit chapters or use playlist editing*
**5 Must be compatible with DVD-R(VR) playback*
**6 Finalize using this recorder (may not playback in some units)*
**7 Must be compatible with DVD-RW(VR) playback*
**8 Must be compatible with DVD+RW playback*
**9 Must be compatible with DVD-RAM playback*
**10 Only when HDD Recording Format is set to Video Mode Off*
**11 Only when the recording mode is not set to LPCM*
**12 CPRM-compatible discs only*
**13 Take the disc out of the cartridge before use. Only Matsushita and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.*
**14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.*
**15 Must be compatible with DVD+R playback*
**16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about 1 hour.*

DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (dual-layer) and DVD+R DL (double-layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- Please read the information provided on the disc packaging carefully before purchasing DVD-R DL/DVD+R DL discs:
- *Confirm the disc version:* Use ver. 3.0 / 2 x to 4 x DVD-R discs.
- *Confirm the recording speed :* DVD-R should be compatible with 2 x or 4 x recording; DVD+R with 2.4 x to 8 x recording.
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

DVD R DL 4X/2X RW DVD+R DL

- Correct operation has been confirmed for DVD-R DL discs (Ver. 3.0 / 2 x, 4 x) produced by the following manufacturers: Mitsubishi Kagaku Media, Verbatim (as of March 2005).

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content -video, audio, etc. -while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format - see below for further compatibility information.

CD-R/RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD-Audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files.
  * *ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.*
- Multi-session playback: Yes (except CD-Audio and Video CD/Super VCD)
- Unfinalized disc playback: CD-Audio only

Compressed audio compatibility

- Compatible media: CD-ROM, CD-R, CD-RW
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 Kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback:Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8*(files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)*
- DRM (Digital Rights Management)[1] file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files - do not use for other file types)
- File structure: Up to 99 folders / 999 files (if these limits are exceeded, only files and folders up to these limits are playable)

WMA (Windows Media Audio) compatibility

The Windows Media® logo printed on the box indicates that this recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player for Windows® XP, Windows Media® Player 9 or Windows Media® Player 10 series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. This recorder can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles." When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). *Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.*
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

DivX® VOD content

DivX

In order to play DivX VOD (video on demand)

Note

1 DRM (digital rights management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC (or other WMA recording equipment) and/or software.

content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

Important

- DivX VOD content is protected by a DRM (Digital Rights Management) system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  * *File format used by digital still cameras*
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files - do not use for other file types)
- File structure: The recorder can load up to 99 folders / 999 files at one time*(if there are more files/folders that this on the disc then more can be reloaded)*

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

Dolby Digital

Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

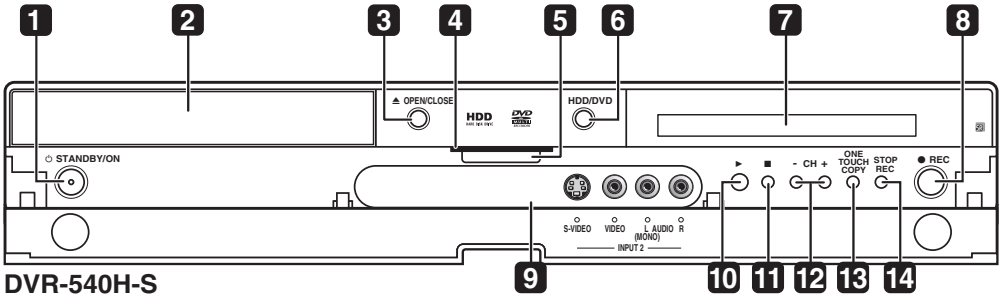
DTS

"DTS" and "DTS Digital Out" are registered trademarks of Digital Theater Systems, Inc.

8. PANEL FACILITIES

8.1 FRONT SECTION

Front panel



DVR-540H-S

1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 Disc tray

3 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

4 HDD / DVD indicators
Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

5 PAUSE LIVE TV
Press to start recording the current TV channel, but with playback paused, effectively pausing the broadcast.

6 HDD/DVD
Press to switch between HDD and DVD for recording and playback.

7 Front panel display and IR remote sensor

8 ● REC
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

9 Front panel inputs

10 ►
Press to start or restart playback.

11 ■
Press to stop playback.

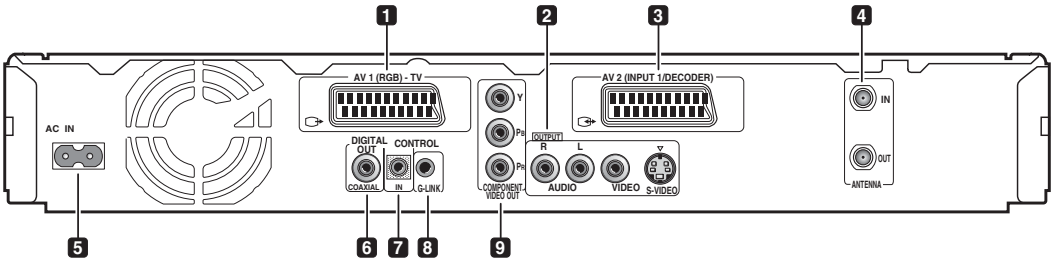
12 CH +/–
Use to change channels, skip chapters/ tracks, etc.

13 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

14 STOP REC
Press to stop recording.

8.2 REAR PANEL and FRONT PANEL section

Rear panel



1 AV1(RGB)-TV AV connector
Audio/video output SCART-type AV connector for connecting to a TV or other equipment with a SCART connector. The video output is switchable between video, S-video and RGB.

2 OUTPUT
Stereo analog audio, video and S-video outputs for connection to a TV or AV amplifier/receiver.

3 AV2(INPUT 1/DECODER) AV connector
Audio/video input/output SCART-type AV connector for connecting to a VCR, or other equipment with a SCART connector. The input accepts video, S-video and RGB.

4 ANTENNA IN (RF IN)/OUT
Connect your TV antenna to the **ANTENNA IN (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

5 AC IN – Power inlet

6 DIGITAL AUDIO OUT
Coaxial digital audio jack for connecting to an AV amplifier/receiver, Dolby Digital/DTS/MPEG decoder or other equipment with a digital input.

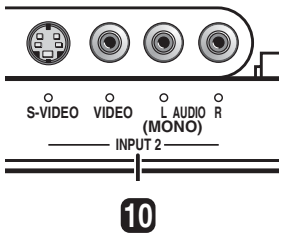
7 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer SR mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

8 G-LINK™
Use to connect the supplied G-LINK™ cable to enable GUIDE Plus+™ to control an external satellite receiver, etc.

9 COMPONENT VIDEO OUT
A high-quality video output for connecting to a TV or monitor with a component video input.

Front panel connections

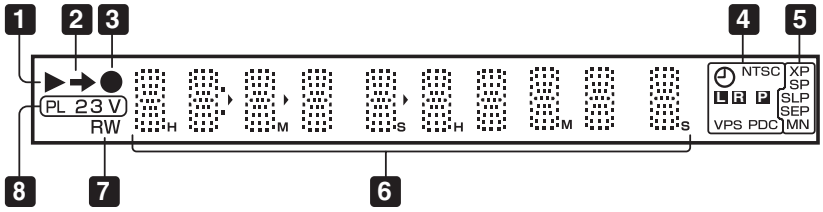
On the front panel a flip-down cover hides more connections.



10 INPUT 2
Audio/video input (stereo analog audio; composite and S-video video), especially suitable for camcorders, game consoles, portable audio, etc.

8.3 DISPLAY

Display



1 ▶
Lights during playback; blinks when playback is paused.

2 ➡
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 ⏲
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

NTSC
Lights when the video output signal format is NTSC.

L R
Indicates which channels of a bilingual broadcast are recorded.

P
Lights when the component video output is set to progressive scan.

VPS / PDC
Lights when receiving a VPS/PDC broadcast during a VPS/PDC-enabled timer recording.

5 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP / SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP / SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

6 Character display

7 R / RW
Lights when a recordable DVD-R or DVD-RW disc is loaded.

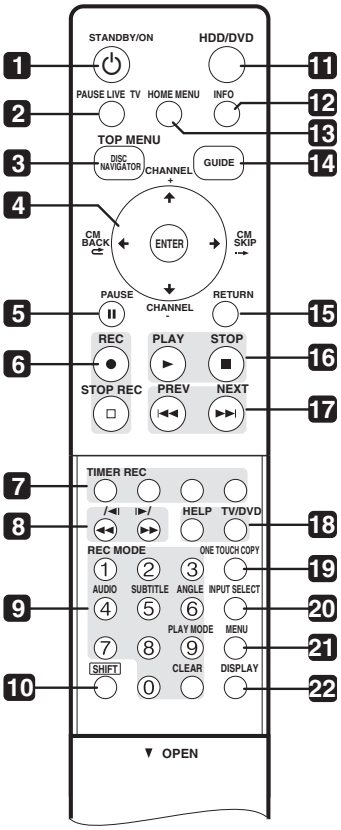
8 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

2 3
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

8.4 REMOTE CONTROL

Remote control



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 PAUSE LIVE TV
Press to start recording the current TV channel, but with playback paused, effectively pausing the broadcast.

3 DISC NAVIGATOR/ TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/RW (Video) disc is loaded.

4 ⬆/⬇/⬅/➡ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

CM BACK (commercial back)
Press repeatedly to skip progressively backward through the audio or video playing.

CM SKIP (commercial skip)
Press repeatedly to skip progressively forward through the audio or video playing.

CHANNEL +/–
Press to change the channel of the built-in TV tuner.

5 ⏸ PAUSE
Press to pause playback or recording.

6 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

When the red action button is visible in a GUIDE Plus+™ screen, use for One-Button-Record.

STOP REC
Press to stop recording.

7 GUIDE Plus+™ Action buttons
When in the GUIDE Plus+™ system, these buttons act as the Red, Green, Yellow and Blue Action buttons (the functions of these buttons change according to the GUIDE Plus+™ Area.

TIMER REC
Hold **SHIFT** and press to set a timer recording from the GUIDE Plus+™ system.

8 ◄◄ ►►
Press to start reverse or forward scanning. Press again to change the speed.

◄II/◄I I►/II►
While paused, press and hold to start slow-motion playback. Press repeatedly to change the playback speed.

While paused, press to advance a single frame in either direction.

When GUIDE Plus+™ is displayed, use to display the previous/next day.

9 Number buttons, CLEAR
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use **CLEAR** to clear an entry and start again.

REC MODE
Hold **SHIFT** and press repeatedly to change the recording mode (picture quality).

AUDIO
Hold **SHIFT** and press to change the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Hold **SHIFT** and press to display/change the subtitles included in multilingual DVD-Video discs.

ANGLE
Hold **SHIFT** and press to switch camera angles on discs with multi-angle scenes.

PLAY MODE
Hold **SHIFT** and press to change the play mode (search, repeat, program play, etc.)

10 SHIFT
Use to access functions on the remote printed in green.

11 HDD/DVD
Press to select the hard disk (HDD) or DVD for recording and playback.

12 INFO
Press to see additional information for the highlighted item in GUIDE Plus+™.

13 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

14 GUIDE
Press to display the GUIDE Plus+™ screen; press again to exit.

15 RETURN
Press to go back one level in the on-screen menu or display.

16 ► PLAY
Press to start playback.

■ STOP
Press to stop playback.

17 I◄◄ ►►I
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

When GUIDE Plus+™ is displayed, use to display the previous/next page.

18 HELP
Press for help on how to use the current GUI screen.

TV/DVD
Press to switch between 'TV mode', in which you get the picture and sound from the TV's tuner, and 'DVD mode', in which you get picture and sound from the recorder's tuner (or an external input).

19 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

20 INPUT SELECT
Press to change the input to use for recording.

21 MENU
Press to display the disc menu if a DVD-Video, finalized DVD-R/-RW or finalized DVD+R/+RW disc is loaded.

When in the GUIDE Plus+™ system, use to jump directly to the Menu bar.

22 DISPLAY
Displays/changes the on-screen information displays.

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	———— (*)	Diagnosis (ID data setting)
Flexible Cable (35P)	GGD1478	Diagnosis of MAIN Assy
4P Power Cable	VKP2291	Extension of HDD
Jig for LD Power Adjustment	GGF1559	LD Power Adjustment
FFC Cable (10P)	GGD1477	LD Power Adjustment
CD-ROM Test Disc	GGV1054	LD Power Adjustment
DVD Dual Layer Test Disc	GGV1036	LD Power Adjustment

(*) Be sure to use the latest disc (Type 2).
In April, 2006, the latest disc is GGV1238.

■ Lubricants and Glues list

Name	Lubricants and Glues No.	Remarks
Hanarl	GEM1041	refer to "2.3 FRONT PANEL SECTION"

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008